# IE 4 Advanced Engineering Mathematics

| | | |
|---|---|---|
| EE302 | Advanced Engineering Mathematics (Electrical) | 2 |

CE 112 Engineering Mechanics+ ME 301 Applied Mathematics (Civil)

Maths 403 Engineering-Mathematics (EE302) (Mechanical)

# Part 1 Lesson

Engineering Mathematics II

| | |
|---|---|
| EE302 | Advanced Engineering Mathematics |

E026/E127

Page 26 to 50 of http://www.filefactory.com/file/cf9bf8f/n/Video_Lessons.pdf

## Engineering Mathematics

http://www.filefactory.com/file/cf88dd4/n/E026.zip

**E026 Lesson 1 to 5**

**The links contain the following lessons**

E026 Lesson 1-Fourier

**https://www.youtube.com/watch?v=QzYO2qCJGNg**

http://youtu.be/fGL7VYtEBV4

E026 Lesson 2-Differential equation

http://youtu.be/RjhgggxG2p0

E026 Lesson 3-Gamma+Beta Function

http://youtu.be/D-bUQ1Uyl_Y

http://youtu.be/6rNFJbbqzyI

E026 Lesson 4-Vector analysis

http://youtu.be/T9OYT8RpqbA

E026-Lesson 5-Laplace Transform

**Links**

E026 Harmonic Exercises

**https://www.youtube.com/watch?v=VSdug1mECDE**

**E026 Definite Integral**

**https://www.youtube.com/watch?v=oal27HPNvhA**

**E026 Harmonics**

**https://www.youtube.com/watch?v=yFM7ajxKnXw**

http://youtu.be/d5drjXEZKv0

http://youtu.be/NDUvNSO6il8

http://youtu.be/d5drjXEZKv0

**E026 Multiple Integral**

http://youtu.be/amV5KiBi0jk

http://youtu.be/lAKJvYUTPiI

E026-Lesson 6-Inverse Laplace+ Differential equation solution

http://youtu.be/yXulBJeI_2w

http://youtu.be/SPGeFn2icU0

http://youtu.be/4VLHZp6joYg

http://youtu.be/bYkyLGd17PU

http://youtu.be/GrYCm8FzAMY

E026-Lesson 7-Matrices

http://youtu.be/99cNSVx4hgU

http://youtu.be/ztHu2UYwA5c

http://youtu.be/m_7oVlLNSsI

http://youtu.be/5hq-ZfZdCRI

E026-Lesson 8 Legendre Function

http://youtu.be/VWyysJQ1grs

E026-Lesson 9 Binomial Theorem+ Partial Differential equation

http://youtu.be/jNj4dWucl50

E026-Lesson 10 Multiple Integral

http://youtu.be/amV5KiBi0jk

https://www.youtube.com/watch?v=yXulBJeI_2w

## Power Engineering Mathematics

G047 Lesson 1 Linear exponential function.zip

http://youtu.be/ndg1MUmniec

http://www.filefactory.com/file/c0b0396/n/G047_Lesson_1_Linear_exponential_function.zip

G047 Lesson 2 Ratio & comparison.zip

http://youtu.be/u33LPINRo7g

http://www.filefactory.com/file/c0b0b59/n/G047_Lesson_2_Ratio_comparison.zip

G047 Lesson 3 Parabolic function.zip

http://youtu.be/sNYDOXagRtE

http://www.filefactory.com/file/c0b0ca5/n/G047_Lesson_3_Parabolic_function.zip

G047 Lesson 4 Oscillation & exponential function.zip

http://youtu.be/RtE9nZdTMBY

http://www.filefactory.com/file/c0b0cfb/n/G047_Lesson_4_Oscillation_exponential_function.zip

G047 Lesson 5 Four terminals network.zip

http://youtu.be/Jlj7XthlS8E

http://www.filefactory.com/file/c0b0c17/n/G047_Lesson_5_Four_terminals_network.zip

G047 Lesson 6 Harmonic.zip

http://youtu.be/WmxoVbYnApE

http://youtu.be/yciymBT7pvQ

http://www.filefactory.com/file/c0b0c5a/n/G047_Lesson_6_Harmonic.zip

**The links contain the following lessons**

G047 Lesson 1 Linear exponential function
G047 Lesson 2 Ratio & comparison
G047 Lesson 3 Parabolic function
G047 Lesson 4 Oscillation & exponential function
G047 Lesson 5 Four terminals network
G047 Lesson 6 Harmonic

Maths 2-E026.zip

http://www.filefactory.com/file/c0b6775/n/Maths_2-E026.zip

**Exercise**

Do Page 18 to 30 of the following link
+
Do Page 182 to 188 of the following link

http://www.filefactory.com/file/c0b7da3/n/Advanced_Diploma_in_Electrical_Engineering_Exercises.zip

# Part 2 References

ENEMP202A Advanced Engineering Mathematics and _Physics

http://www.filefactory.com/file/dmwd786sil3/RE009a_pdf

**G047+4269T+7762AH.pdf (13.49MB)**
http://www.filefactory.com/file/1g3icj5khuhx/n/G047+4269T+7762AH.pdf

**G047+4269T+7762AH.zip (5.16MB)**
http://www.filefactory.com/file/3e1xbi59r6t5/n/G047+4269T+7762AH.zip

**G047_4269T_7762AH.zip (5.16MB)**
http://www.filefactory.com/file/574a00pyylrt/n/G047_4269T_7762AH.zip

**E026-Maths.zip (4.59MB)**
http://www.filefactory.com/file/68ljehvaa79j/n/E026-Maths.zip

**E026-Maths Tutorial.doc (4.74MB)**
http://www.filefactory.com/file/60x1miee28l7/n/E026-Maths_Tutorial.doc

**E026 Maths 1.zip (9.08MB)**
http://www.filefactory.com/file/1txc9kntwf0x/n/E026_Maths_1.zip

**E026+6032H.zip (7.86MB)**
http://www.filefactory.com/file/888sy7pv0kh/n/E026+6032H.zip

**E026+6032H 1.zip (1.69MB)**
http://www.filefactory.com/file/6wbp3y4fcpj5/n/E026+6032H_1.zip

**Maths 501 linear-algebra-c-1.pdf (2.96MB)**
http://www.filefactory.com/file/27ijmscm25ch/n/Maths_501_linear-algebra-c-1.pdf

**Maths 403 engineering-mathematics-youtube-workbook.pdf (3.27MB)**
http://www.filefactory.com/file/d2gb0mbcr75/n/Maths_403_engineering-mathematics-youtube-workbook.pdf

**Maths 303 Introductory-finite-volume-methods-for-pdes.pdf (4.75MB)**
http://www.filefactory.com/file/1rxsfsgrcqlh/n/Maths_303_Introductory-finite-volume-methods-for-pdes.pdf

**Maths 303 Introductory-finite-volume-methods-for-pdes.pdf (4.75MB)**
http://www.filefactory.com/file/13knzyizcpqj/n/Maths_303_Introductory-finite-volume-methods-for-pdes.pdf

**Maths 302 elementary-linear-algebra.pdf (7.54MB)**
http://www.filefactory.com/file/5yv13tq9n6bn/n/Maths_302_elementary-linear-algebra.pdf

**Maths 301 Introductory-finite-difference-methods-for-pdes.pdf (4MB)**
http://www.filefactory.com/file/6xlmja0a65t5/n/Maths_301_Introductory-finite-difference-methods-for-pdes.pdf

**Maths 101 Engineering Mathematics.pdf (3.27MB)**
http://www.filefactory.com/file/q3qjlfbmivt/n/Maths_101_Engineering_Mathematics.pdf

# Online Test

**E026**

E026 MCQ Practice 1

E026 MCQ Practice 2

E026 MCQ Practice 3

# Online Test Marking

**E026----------E127**

http://www.filefactory.com/file/4j761oxti5cd/n/E026_Online_Test_1_Marking_doc

http://www.filefactory.com/file/5pnc8uwozyq7/n/E026_Online_Test_1_Answer_doc

http://www.filefactory.com/file/68kzit8b851r/n/E026_Online_Test_1_Question_pdf

http://www.classroomclipboard.com/503511/Home/Test/5652af0e678c48289f336052c5867fce#/InitializeTest.xaml

KMSG

## EE302 Advanced Engineering Mathematics

## Tutoring Lessons

EE302 Part 1 EE302 Part 2 EE302 Part 3 EE302 Part 4

http://www.filefactory.com/file/5l9fpcclhjzp/n/E026_Online_Test_3_Question_pdf

http://www.filefactory.com/file/64ccdiiuf0ax/n/E026_Online_Test_3_Answer_doc

Do the tests and send the answer sheet in soft copy by e-mail to **iqytechnicalcollege@gmail.com**

Password- **iqytechnicalcollege**

E026 Online test

Ref 27

$\frac{dy}{dx} = 3x^2$ Find Y

| | | | |
|---|---|---|---|
| A | $X^3+C$ | B | $3X^4+C$ |
| C | $1/X^3+C$ | D | Ln X +C |
| | Answer | | |

Ref 28

Solve $y'' = 3x - 2$ , $y(0)= 2$ $y'(1) = -3$, the generalized answer is

| | | | |
|---|---|---|---|
| A | $X^4 - X^3 - X^2 - 5/2\,X + 2$ | B | $X^3 - X^2 - X^2 - 5/2\,X + 2$ |
| C | $X^2 - 3X + 2$ | D | $X^3 - 3X + 2$ |
| | Answer | | |

Ref 29

Find general equation of

$(4X+XY^2)dX+(Y+X^2y)dY=0$

| | | | |
|---|---|---|---|
| A | $\text{Ln}(1+X^2) + 1/2\ \text{Ln}(4+Y^2)$ | B | $\text{Ln}(1+X^2) + 1/3\ \text{Ln}(4+Y^2)$ |
| C | $1/(1+X^2) + 1/(1+Y^2)$ | D | $(1+X^2) + (4+Y^2)$ |
| | Answer | | |

Ref 30

Evaluate the following

$\Gamma(6)$

---

$2\ \Gamma(3)$

| | | | |
|---|---|---|---|
| A | 10 | B | 30 |
| C | 15 | D | 25 |
| | Answer | | |

Ref 31

Evaluate the following

Γ(5/2)

---

Γ(1/2)

| | | | |
|---|---|---|---|
| A | 3 / 4 | B | 3 / 2 |
| C | 3 | D | 1 / 3 |
| | Answer | | |

Ref 32

Find the volume of region R bounded by parabolic cylinder $Z = 4 - X^2$ & planes $X = 0, Y=0, Y=6, Z=0$

| | | | |
|---|---|---|---|
| A | 16 | B | 32 |
| C | 42 | D | 64 |
| | Answer | | |

Ref33

Laplace transform of 5 sin 2t – 3 cos 2t is

| | | | |
|---|---|---|---|
| A | $\frac{10 - 3S}{S^2+4}$ | B | $\frac{3S - 10}{S^2+4}$ |
| C | $\frac{10}{S^2+4}$ | D | $\frac{3S}{S^2+4}$ |
| | Answer | | |

Ref34

. Find

$$Ł^{-1}\left\{\frac{4S-3}{S^2+4}\right\}$$

| | | | |
|---|---|---|---|
| A | 3/2 sin 2t – 4 cos 2t | B | 4 cos 2t – 3/2 sin 2t |
| C | 4 sin2t – 3/ 2 cos 2t | D | Sin3t – cos 4t |
| | Answer | | |

Ref 35

Find

$$Ł^{-1}\left\{\frac{4S-3}{S^{3/2}}\right\}$$

| | | | |
|---|---|---|---|
| A | $\frac{8\,t^{-1/2}-5t}{\sqrt{\Pi}}$ | B | $\frac{5\,t^2}{\sqrt{\Pi}}$ |
| C | $\frac{8\,t^{-1/2}-5t^{-1/2}}{\sqrt{\Pi}}$ | D | $\frac{8\,t^2-5}{\sqrt{\Pi}}$ |
| | Answer | | |

Ref 36

. Find

$$Ł^{-1}\left\{\frac{1}{S^2+2S}\right\}$$

| | | | |
|---|---|---|---|
| A | ½ t - ½ $e^{-2t}$ | B | t - $e^{-t}$ |
| C | ½ t - ½ $e^{t}$ | D | 2 t - $e^{2t}$ |
| | Answer | | |

Ref37

The solution of the given differential equation $y' - 3y'+2y = 2e^{-t}$ where y(0) = 2 , y' (00 = -1 by Laplace transform is

| | | | |
|---|---|---|---|
| A | $7e^{2t}+4e^{t}+e^{-t}$ | B | $3e^{2t}+e^{t}+3e^{-t}$ |
| C | $-7/3\ e^{-2t}+4e^{t}+1/3\ e^{-t}$ | D | $-7\ e^{-2t}+e^{t}+3\ e^{-3t}$ |
| | Answer | | |

Ref38

A resistor R = 10 Ω Inductor 2H and a voltage E volt are connected in series with switch S .

At t = 0, the switch is closed and I = 0.

Find I for t >0 if E = 40V

| | | | |
|---|---|---|---|
| A | $4t-4\ e^{-5t}$ | B | $4-e^{-t}$ |
| C | 4t | D | 4 |
| | Answer | | |

Ref39

Inverse matrix of the matrix for given equations

$3X_1 - 2X_2 + 2X_3 = 10$

$X_1 + 2X_2 - 2X_3 = -1$

$4X_1 + X_2 + 2X_3 = 3$ is

| | | | |
|---|---|---|---|
| A | $\begin{pmatrix} \frac{7}{35} & \frac{6}{15} & \frac{2}{35} \\ \frac{-14}{35} & \frac{-2}{35} & \frac{11}{35} \\ \frac{-7}{35} & \frac{-11}{35} & \frac{8}{35} \end{pmatrix}$ | B | $\begin{pmatrix} 7 & 6 & 2 \\ 14 & -2 & 11 \\ -7 & -11 & 8 \end{pmatrix}$ |
| C | $\begin{pmatrix} \frac{1}{35} & \frac{6}{35} & \frac{1}{35} \\ -14 & -2 & 11 \\ -7 & -11 & -8 \end{pmatrix}$ | D | $\begin{pmatrix} 1 & 6 & 1 \\ 2 & 3 & 4 \\ 7 & 11 & 8 \end{pmatrix}$ |
| | Answer | | |

E026 Online test

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| C | $X^2 - 3X + 2$ | D | $X^3 - X^2 - X^2 - 5/2\,X + 2$ |
| | Answer | | |

Ref 29

Find general equation of

$(4X+XY^2)dX+(Y+X^2y)dY=0$

| | | | |
|---|---|---|---|
| A | $(1+X^2)+(4+Y^2)$ | B | $\text{Ln}(1+X^2) + 1/3\ \text{Ln}(4+Y^2)$ |
| C | $1/(1+X^2) + 1/(1+Y^2)$ | D | $\text{Ln}(1+X^2) + 1/2\ \text{Ln}(4+Y^2)$ |
| | Answer | | |

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| C | 30 | D | 25 |
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Γ(1/2)

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|---|---|---|---|
| A | 1 / 3 | B | 3 / 2 |
| C | 3 | D | 3 / 4 |
| | Answer | | |

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Find the volume of region R bounded by parabolic cylinder $Z = 4 - X^2$ & planes X = 0, Y=0, Y=6 ,Z=0

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| C | $\frac{10}{S^2+4}$ | D | $\frac{3S}{S^2+4}$ |
| | Answer | | |

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. Find

$$Ł^{-1}\left\{\frac{4S - 3}{S^2 + 4}\right\}$$

| | | | |
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| C | 4 sin2t – 3/ 2 cos 2t | D | Sin3t – cos 4t |
| | Answer | | |

Ref 35

Find

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| | | | |
|---|---|---|---|
| A | $\frac{8t^{-1/2}-5t}{\sqrt{\Pi}}$ | B | $\frac{5t^{2}}{\sqrt{\Pi}}$ |
| C | $\frac{8t^{2}-5}{\sqrt{\Pi}}$ | D | $\frac{8t^{-1/2}-5t^{-1/2}}{\sqrt{\Pi}}$ |
| | Answer | | |

Ref 36

. Find

$$Ł^{-1}\left\{\frac{1}{S^{2}+2S}\right\}$$

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| C | $7e^{2t} + 4e^{t} + e^{-t}$ | D | $-7e^{-2t} + e^{t} + 3\ e^{-3t}$ |
| | Answer | | |

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A resistor $R = 10\ \Omega$ Inductor 2H and a voltage E volt are connected in series with switch S .

At $t = 0$, the switch is closed and $I = 0$.

Find I for $t > 0$ if $E = 40V$

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|---|---|---|---|
| A | $4 - e^{-t}$ | B | $4t - 4e^{-5t}$ |
| C | $4t$ | D | 4 |
| | Answer | | |

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Inverse matrix of the matrix for given equations

$3X_1 - 2X_2 + 2X_3 = 10 \quad X_1 + 2X_2 - 2X_3 = -1 \quad 4X_1 + X_2 + 2X_3 = 3$ is

| | | | |
|---|---|---|---|
| A | $\begin{pmatrix} \frac{1}{35} & \frac{6}{35} & \frac{1}{35} \\ -14 & -2 & 11 \\ -7 & -11 & -8 \end{pmatrix}$ | B | $\begin{pmatrix} 7 & 6 & 2 \\ 14 & -2 & 11 \\ -7 & -11 & 8 \end{pmatrix}$ |
| C | $\begin{pmatrix} \frac{7}{35} & \frac{6}{15} & \frac{2}{35} \\ \frac{-14}{35} & \frac{-2}{35} & \frac{11}{35} \\ \frac{-7}{35} & \frac{-11}{35} & \frac{8}{35} \end{pmatrix}$ | D | $\begin{pmatrix} 1 & 6 & 1 \\ 2 & 3 & 4 \\ 7 & 11 & 8 \end{pmatrix}$ |
| | Answer | | |