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DATE/TIME: 28TH APRIL 2020 11:00 HRS

M CODE: M4X02193

MODULE DES: ANALYTICAL METHODS WITH STUDY SKILLS

1

A) $Y = 9x^4 - 2x^3 + 2x + 5$

$$\frac{DY}{DX} = 36x^3 - 6x^2 + 2$$

$$9(4)x^{4-1} - 2(3)x^{3-1} + 2(1)x^{1-1} + 5(0)$$

B) $Y = (x+2)(x+5)$

$$\frac{DY}{DX} = 2x + 7$$

$$Y = x^2 + 2x + 5x + 10$$

$$Y = x^2 + 7x + 10$$

$$2x^{2-1} + 7x^{1-1} + 10(0)$$

C) $Y = 2e^{2x} + 2 \ln x$

$$\frac{DY}{DX} = 4e^{2x} + \frac{2}{x}$$

$$2(2)e^{2x} + 2\frac{1}{x}$$

D) $Y = 2 \sin 5x$

$$\frac{DY}{DX} = 10 \cos 5x$$

$$2(5) \cos 5x$$

E) $Y = \frac{1}{x^3}$

$$\frac{DY}{DX} = -3x^{-4}$$

$$Y = x^{-3}$$

F) $Y = \overset{u}{x^3} \overset{v}{\sin x}$

$$\frac{DY}{DX} = (x^3)(\cos x) + (\sin x)(3x^2)$$

$$\frac{DU}{DX} = 3x^2$$

$$\frac{DV}{DX} = \cos x$$

G) $Y = \frac{x^5 + 2x + 1}{\sin x}$

$$\frac{DY}{DX} = \frac{(\sin x)(5x^4 + 2) - (x^5 + 2x + 1)(\cos x)}{(\sin x)^2}$$

$$\frac{DU}{DX} = 5x^4 + 2$$

$$\frac{DV}{DX} = \cos x$$

$$\frac{DY}{DX} = \frac{(\sin x)(5x^4 + 2) - (x^5 + 2x + 1)(\cos x)}{(\sin x)^2}$$