

Maths exam

6 May 2021 at 10:49

1.

(i) $y = 7x^3 - 2x^2 + x + 2$

$$\frac{dy}{dx} = 21x^2 - 4x + 1$$

(ii) $y = (x+3)(x+2)$

$$y = x^2 + 3x + 2x + 6$$

$$y = x^2 + 5x + 6$$

$$\frac{dy}{dx} = 2x + 5$$

(iii) $y = \frac{1}{x^3} + \sin 3x$

$$\frac{dy}{dx} = x^{-3} + 3\cos 3x$$

(iv) $y = x^4 \tan 2x$

$$\frac{dy}{dx} = 4x^3 2\sec^2 2x$$

(v) $y = \frac{e^{2x}}{\cos 2x}$

$$\frac{dy}{dx} = \frac{2e^{2x}}{-2\sin 2x}$$

(vi) $y = (5x^2 + 2x + 1)^5$

$$y = (10x + 2)^5$$

$$\frac{dy}{dx} = 10x^4 + 32$$

(i) $\sin x = 0.65$

$$\sin^{-1}(0.65)$$

$$x = 40.54$$

(ii) $7\cos x = 4$

$$\cos x = \frac{4}{7}$$

$$x = \cos^{-1}\left(\frac{4}{7}\right)$$

(iii) $\tan x = -0.22$

$$\tan x = 0.22$$

$$x = \tan^{-1}(0.22)$$