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EX 2.4 FIND THE DERIVATIVE

#1 $y = 3x + 4$

$y = ax^n$

$\frac{dy}{dx} = anx^{n-1}$

$\frac{dy}{dx} = 3x^0 + 4(0)$

$\boxed{\frac{dy}{dx} = 3}$

#3 $y = 1 - 2x$

$\frac{dy}{dx} = 1(0) - 2(x^0)$

$\boxed{\frac{dy}{dx} = -2}$

#5. $y = 3x^2$

$\frac{dy}{dx} = 6x^1$

$\boxed{\frac{dy}{dx} = 6x}$

#7 $y = x^2 - 2x$

$\boxed{\frac{dy}{dx} = 2x - 2}$

Ex 2.4

#9. $y = 3x^2 - 4x + 1$

$$\boxed{\frac{dy}{dx} = 6x - 4}$$

#11 $y = 1 - 6x^2$

$$\boxed{\frac{dy}{dx} = -12x}$$

#13. $y = x^3 + 4x$

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

#15. $y = \frac{1}{x}$ $y = x^{-1}$

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

$$\boxed{\frac{dy}{dx} = \frac{-1}{x^2}}$$

#17. $y = \frac{2}{(x-3)}$ $y = 2(x-3)^{-1}$

$$\frac{dy}{dx} = (-2)(x-3)^{-2}(1)$$

$$\frac{dy}{dx} = -2(x-3)^{-2}$$

$$\boxed{\frac{dy}{dx} = \frac{-2}{(x-3)^2}}$$

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RCET 264 INTRO CALC
HW #1
Pg 104 Ex 2.4 #17-27odd
1-12-16

FIND THE DERIVATIVE OF EACH EQUATION.

#17 $y = 3x + 4$

$y = ax^n \qquad \frac{dy}{dx} = anx^{n-1}$

$\frac{dy}{dx} = (3)(1)(x^0) + 4(0)(0)$

$\frac{dy}{dx} = (3)(1)(1) + 0$

$$\boxed{\frac{dy}{dx} = 3}$$

#19 $y = \frac{1}{x^2}$

$y = x^{-2}$

$y = ax^n \qquad \frac{dy}{dx} = anx^{n-1}$

$\frac{dy}{dx} = (1)(-2)(x^{-3})$

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

$$\boxed{\frac{dy}{dx} = \frac{-2}{x^3}}$$

#21. $y = \frac{1}{4-x^2}$

$y = (4-x^2)^{-1}$

$y = ax^n \qquad \frac{dy}{dx} = anx^{n-1}$

$\frac{dy}{dx} = (1)(-1)(4-x^2)^{-1-1}(4(0)-(1)(2)x^1)$

$\frac{dy}{dx} = (-1)(4-x^2)^{-2}(-2x)$

$$\boxed{\frac{dy}{dx} = \frac{2x}{(4-x^2)^2}}$$

#23 $y = \sqrt{x+1}$

$y = (x+1)^{\frac{1}{2}} \qquad y = ax^n \quad \frac{dy}{dx} = anx^{n-1}$

$\frac{dy}{dx} = (1)(\frac{1}{2})(x+1)^{\frac{1}{2}-1}(1(1)x^0 + 0)$

$\frac{dy}{dx} = (\frac{1}{2})(x+1)^{-\frac{1}{2}}(1)$

$\frac{dy}{dx} = \frac{1}{2(x+1)^{\frac{1}{2}}}$

$$\boxed{\frac{dy}{dx} = \frac{1}{2\sqrt{x+1}}}$$

#25. $y = \sqrt{1-2x}$

$y = (1-2x)^{1/2}$

$y = ax^n \qquad \frac{dy}{dx} = anx^{n-1}$

$\frac{dy}{dx} = (1)(\frac{1}{2})(1-2x)^{\frac{1}{2}-1}(-2)(1)(x)^{1-1}$

$\frac{dy}{dx} = (\frac{1}{2})(1-2x)^{-1/2}(-2)(1)(1)$

$\frac{dy}{dx} = \frac{-1}{(1-2x)^{1/2}}$

$$\boxed{\frac{dy}{dx} = \frac{-1}{\sqrt{1-2x}}}$$

#27. $y = \frac{1}{\sqrt{x-1}}$

$y = \frac{1}{(x-1)^{1/2}}$

$y = (x-1)^{-1/2} \qquad y = ax^n \quad \frac{dy}{dx} = anx^{n-1}$

$\frac{dy}{dx} = 1(-\frac{1}{2})(x-1)^{-\frac{1}{2}-1}(1)(1)(x^{1-1}) - (0)$

$\frac{dy}{dx} = (1)(-\frac{1}{2})(x-1)^{-1.5}$

$\frac{dy}{dx} = \frac{-1}{2(x-1)^{1.5}}$

$$\boxed{\frac{dy}{dx} = \frac{-1}{2(x-1)^{3/2}}}$$