3. $t^{1/3}(t^2+4)$

$t^{2/3} + 4t^{1/3}$

$\frac{2}{3}t^{-1/3} + \frac{4}{3}t^{-2/3}$

9. $\dfrac{x^{1/3}}{x^3+1}$

$3x^{2/3}$

$$\frac{(x^3+1)\left(\frac{1}{3}x^{-2/3}\right) - x^{1/3}(3x^2)}{(x^3+1)^2}$$

25. $\dfrac{3-2x-x^2}{x^2-1}$

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

$$\frac{-2x^2-2x^3+2+2x-6x+4x^2+2x^3}{(x^2-1)^2}$$

$$\frac{2x^2-4x+2}{(x^2-1)^2}$$

2.3B

A. When taking derivatives

$$y \to y' \to y'' \to y''' \to y^{4}$$

$$f(x) \to f'(x) \to f''(x) \to f'''(x) \to f^{4}(x)$$

$$\frac{d}{dx} \to \frac{dy}{dx} \to \frac{d^2y}{dx^2} \to \frac{d^3y}{dx^3}$$

Ex. $y = 3x^5 - 10x^2 + 2$

$y' = 15x^4 - 20x$

$y'' = 60x^3 - 20$

$y''' = 180x^2$

Ex. $y = 5\sin x$

$y' = 5\cos x$

$y'' = -5\sin x$

$y''' = -5\cos x$

$y^{4} = 5\sin x$

1. $S(t)$ = position

$S'(t) = v(t)$ = velocity

$S''(t) = v'(t) = a(t)$ = acceleration

Ex. If $s(t) = -16t^2 - 14t + 30$

What is the acceleration at $t = 3$?

$v(t) = -32t - 14$

$a(t) = -32 \text{ ft/sec}^2$

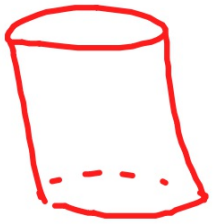
B. $y = \tan x \quad y' = \sec^2 x$

$$y = \frac{\sin x}{\cos x}$$

$$\frac{\cos x(\cos x) - \sin x(-\sin x)}{\cos^2 x}$$

$$\frac{\cos^2 x + \sin^2 x}{\cos^2 x} = \frac{1}{\cos^2 x} = \sec^2 x$$

$V_{cylinder} = \pi r^2 \cdot h$



2.3
43-54
83, 84,
93-101 odd
115, 116