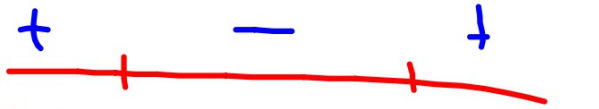
$$\frac{x^3}{(x-4)} - 3x$$

$$\frac{3}{4}x^2 - 3 = 0$$
$$+3 \quad +3$$

$$\frac{4}{3} \cdot \frac{3}{4}x^2 = 3 \cdot \frac{4}{3}$$

$$x^2 = 4$$

$\pm 2 = x$



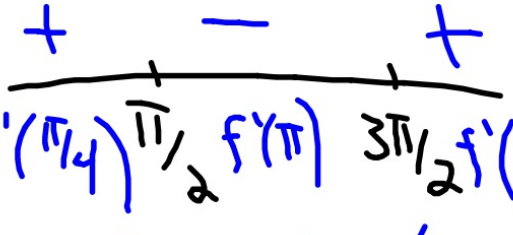
$$\frac{x^3}{4x} = \frac{x^2}{4}$$

3.3B More 1st Derivative

A. $f(x) = \sin x$ on $[0, 2\pi]$

$0 = \cos x$

$x = \frac{\pi}{2}, \frac{3\pi}{2}$



Inc: $[0, \pi/2) \cup (3\pi/2, 2\pi]$

Dec: $(\pi/2, 3\pi/2)$

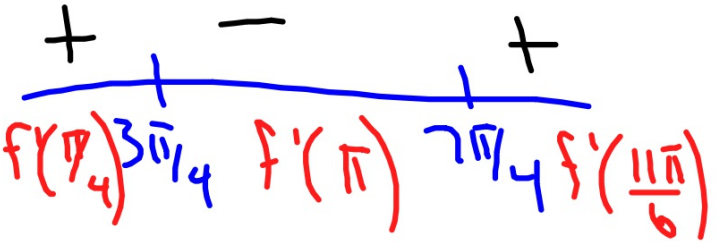
Ex. $f(x) = \sin x - \cos x \; ; \; [0, 2\pi]$

$0 = \cos x + \sin x$

$-\cos x$

$-\cos x = \sin x$

$\frac{3\pi}{4}, \frac{7\pi}{4}$



Inc: $[0, 3\pi/4) \cup (7\pi/4, 2\pi]$

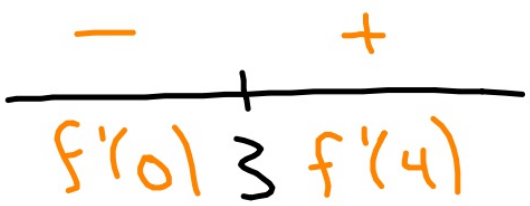
Dec: $(3\pi/4, 7\pi/4)$

B. #17 $f(x) = x^2 - 6x$

$0 = 2x - 6$

$\frac{6}{2} = \frac{2x}{2}$

$3 = x$



Inc: $(3, +\infty)$

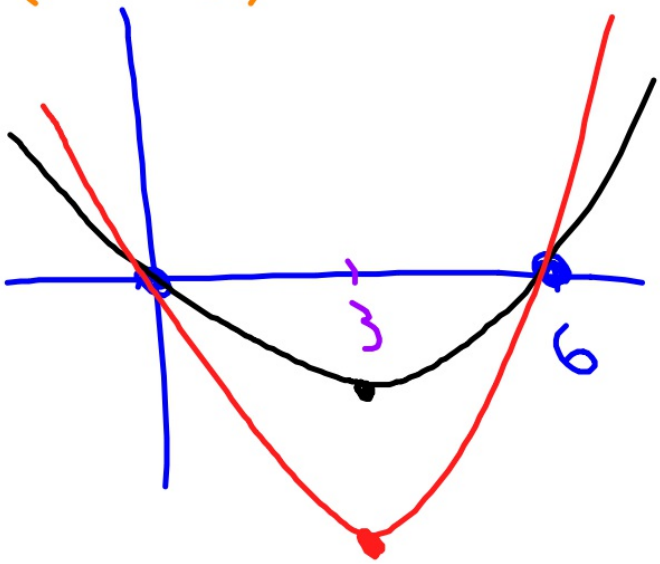
Dec: $(-\infty, 3)$

X-intercepts

$0 = x^2 - 6x$

$0 = x(x-6)$

0 6



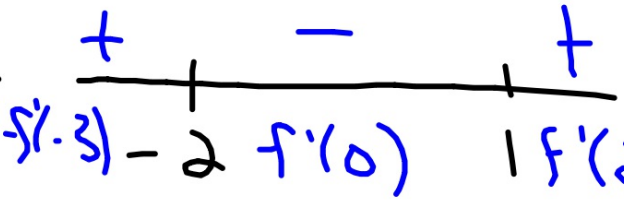
#21 $f(x) = 2x^3 + 3x^2 - 12x$

$0 = 6x^2 + 6x - 12$

$0 = 6(x^2 + 1x - 2)$

$0 = 6(x+2)(x-1)$

$x = -2, +1$



Inc: $(-\infty, -2) \cup (1, +\infty)$

Dec: $(-2, 1)$

3.3 19-24, 26 {Draw

39-42 {Inc/Dec

61-64