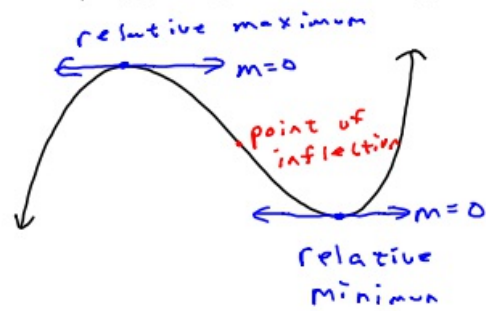
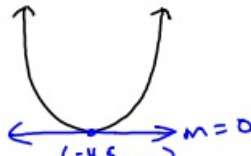


1-12-18 1st Trig



① Find critical point of

$$f(x) = x^2 + 9x + 2$$



$$f'(x) = 2x + 9$$

$$\begin{array}{r} 2x + 9 = 0 \\ -9 \quad -9 \\ \hline 2x = -9 \end{array}$$

$$x = -4\frac{1}{2}$$

Plug $-4\frac{1}{2}$ in to $f(x) = x^2 + 9x + 2$

$$\begin{aligned} f(-4.5) &= (-4.5)^2 + 9(-4.5) + 2 \\ &= 20.25 - 40.5 + 2 \\ &= -18.25 \end{aligned}$$

$$(-4.5, -18.25)$$

Quick point

$$f(x) = \frac{1}{3}x^3 + 4x^2 + 12x$$

$$f'(x) = x^2 + 8x + 12$$

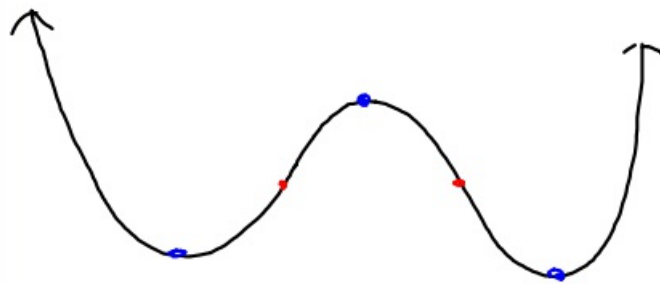
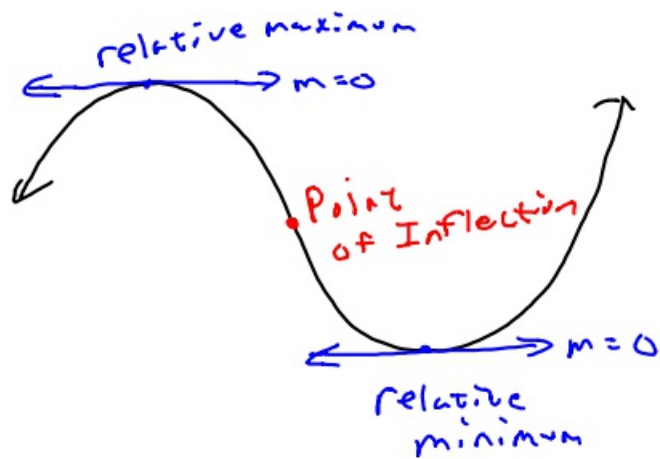
$$x^2 + 8x + 12 = 0$$

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

$$\begin{aligned} x+6 &= 0 \\ x &= -6 \end{aligned}$$

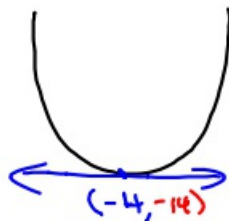
$$\begin{aligned} x+2 &= 0 \\ x &= -2 \end{aligned}$$

1-12-18 3rd Trig



Think

$$f(x) = x^2 + 8x + 2$$



$$(-4)^2 + 8(-4) + 2$$

$$f'(x) = 2x + 8$$

$$2x + 8 = 0$$

$$x = -4$$

$$f(x) = \frac{1}{3}x^3 + 4x^2 + 12x$$

$$f'(x) = x^2 + 8x + 12$$

$$x^2 + 8x + 12 = 0$$

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

$$x+6 = 0$$

$$x = -6$$

$$x+2 = 0$$

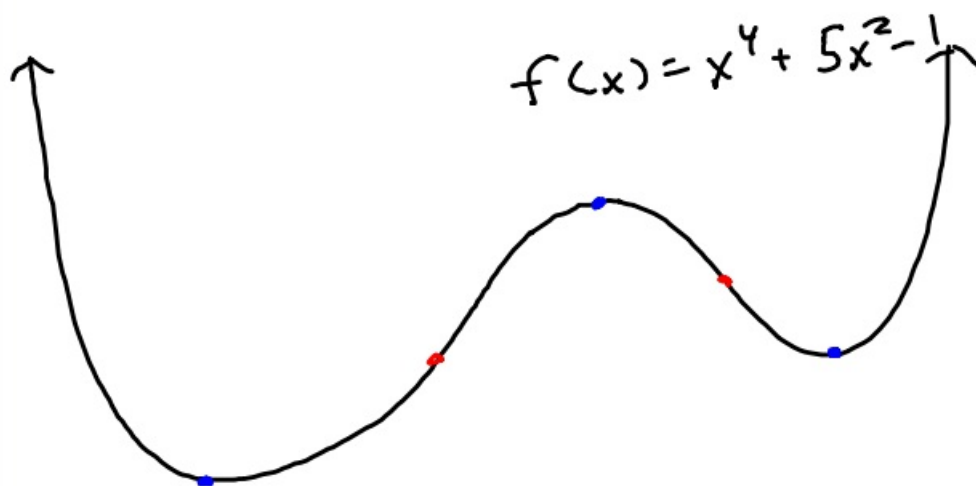
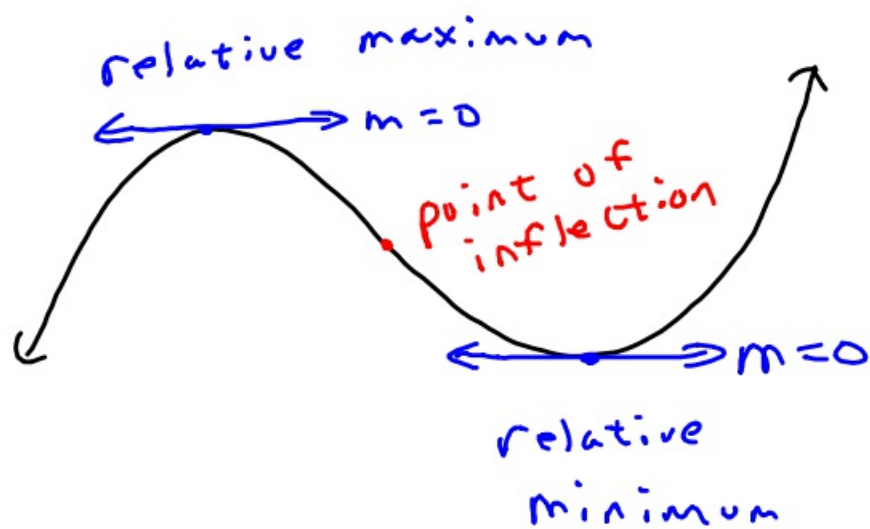
$$x = -2$$

$$f''(x) = 2x + 8$$

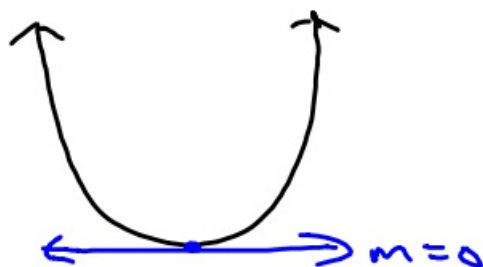
$$2x + 8 = 0$$

$$x = -4$$

1-12-18 4th Trig



$$f(x) = x^2 + 6x + 1$$



$$f(x) = \frac{1}{3} x^3 + 4x^2 + 12x$$

$$f'(x) = x^2 + 8x + 12$$

$$x^2 + 8x + 12 = 0$$

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

$$\begin{array}{r} x+6=0 \\ -6 \quad -6 \\ \hline \end{array}$$

$$x = -6$$

$$\begin{array}{r} x+2=0 \\ -2 \quad -2 \\ \hline \end{array}$$

$$x = -2$$

$$f''(x) = 2x + 8$$

$$2x + 8 = 0$$

$$x = -4$$