## Synthetic Substitution Practice Solutions

$$f(x) = x^3 - 7x^2 + 7x + 15 \qquad f(2) = 9 \quad \text{so this graph contains the point (2,9)}$$

$$\frac{2}{1} \frac{-7}{-5} \frac{7}{-3} \frac{15}{-9}$$

$$\frac{2}{1} \frac{-7}{-5} \frac{-10}{-3} \frac{-6}{-3}$$

$$\frac{7}{7} \frac{15}{7} \frac{-6}{-3} \frac{15}{-3} \frac{15}{-$$

Factor using Synthetic Division

$$f(x) = x^3 - 7x^2 + 7x + 15$$

$$\frac{-1}{1} = -7 = 7 = 7 = 15$$

$$\frac{1}{1} = -\frac{1}{-8} = \frac{8}{15} = -15$$

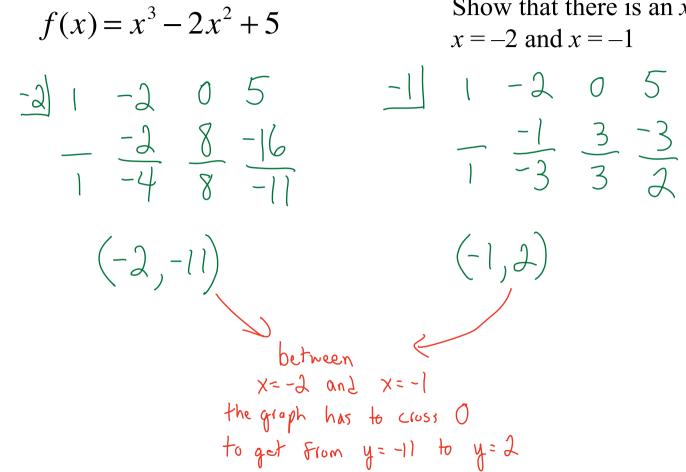
$$\frac{(x+1)(x^2-8_x+15)}{(x+1)(x-3)(x-5)}$$

$$\frac{(x+1)(x-3)(x-5)}{(x-5)}$$

$$\frac{(-1,0)(3,0) \text{ and } (5,0)}{(5,0)}$$

## Factor using Synthetic Division

$$f(x) = x^{3} - 3x - 2 \qquad \underline{\lambda} \qquad 1 \qquad 0 \qquad -3 \qquad -\lambda \qquad \underline{\lambda} \qquad$$



Show that there is an *x*-intercept between x = -2 and x = -1