

Use synthetic division complete the following.

10. Find $f(x)$ with $x = 1$.

$$8x^2 - 70x + 117 \text{ R } 42$$

$$\begin{array}{r|rrrr} 8 & -78 & 187 & -75 & 1 \\ & & 8 & -70 & 117 \\ \hline 8 & -70 & 117 & & 42 \end{array}$$

11. Find $f(x)$ with $x = \frac{1}{2}$.

$$8x^2 - 74x + 150$$

$$\begin{array}{r|rrrr} 8 & -78 & 187 & -75 & \left(\frac{1}{2}\right) \text{ (} x - \frac{1}{2} \text{)} \\ & & 4 & -37 & 75 \\ \hline 8 & -74 & 150 & & 0 \end{array}$$

12. Call the depressed equation (see p. 379) $g(x)$.

$$g(x) = \underline{8x^2 - 74x + 150}$$

13. Find $g(x)$ with $x = 3$.

$$8x - 50$$

$$\begin{array}{r|rrrr} 8 & -74 & 150 & 15 & \text{(} x - 3 \text{)} \\ & & 24 & -150 & \\ \hline 8 & -50 & & & 0 \end{array}$$

14. Factor $f(x)$ completely.

$$(8x - 50)(x - \frac{1}{2})(x - 3)$$

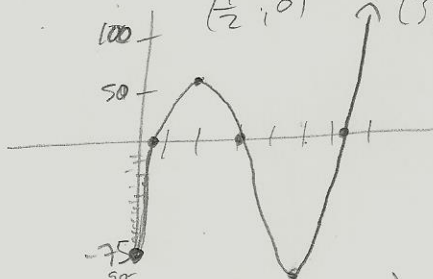
$$8x - 50 = 0$$

$$\frac{8x}{8} = \frac{+50}{8} = 6.25 \quad (x - 6.25) \quad \underline{f(x) = (x - \frac{1}{2})(x - 3)(x - 6.25)}$$

15. State the x values that one can use to design an open rectangular container with a $8\frac{1}{2}$ inches by 11 inches cardboard so that the volume is at least $37\frac{1}{2}$ cubic inches.

$$x = \frac{1}{2} \quad x = 3 \quad x = 6.25$$

$$\left(\frac{1}{2}, 0\right) \quad (3, 0) \quad (6.25, 0)$$



$$\left\{ x \mid \frac{1}{2} \leq x \leq 3 \right\} \text{ OR } \left[\frac{1}{2}, 3 \right]$$

POSITIVE

$$\begin{array}{l} \text{N} \\ x^3 \\ \downarrow \\ (+) 8(0)^3 - 78(0)^2 + 187(0) - 75 \\ 0 - 0 + 0 - 75 \quad (0, -75) \end{array}$$