

GSE Algebra II
Synthetic Division

Name: Odd Solutions

Divide using synthetic division.

1. $(x^3 - 7x - 6) \div (x - 2)$ $x - 2 = 0$
 $x = 2$

$$\begin{array}{r|rrrr} 2 & 1 & 0 & -7 & -6 \\ & \downarrow & 2 & 4 & -6 \\ \hline & 1 & 2 & -3 & -12 \end{array}$$

$$\boxed{x^2 + 2x - 3 - \frac{12}{x-2}}$$

2. $(4x^2 + 5x - 4) \div (x + 1)$

5. $(10x^4 + 5x^3 + 4x^2 - 9) \div (x + 1)$ $x + 1 = 0$
 $x = -1$

$$\begin{array}{r|rrrrr} -1 & 10 & 5 & 4 & 0 & -9 \\ & \downarrow & -10 & 5 & -9 & 9 \\ \hline & 10 & -5 & 9 & -9 & 0 \end{array}$$

$$\boxed{10x^3 - 5x^2 + 9x - 9}$$

6. $(x^3 - 14x + 8) \div (x + 4)$

3. $(2x^2 + 7x + 8) \div (x - 2)$ $x - 2 = 0$
 $x = 2$

$$\begin{array}{r|rrr} 2 & 2 & 7 & 8 \\ & \downarrow & 4 & 22 \\ \hline & 2 & 11 & 30 \end{array}$$

$$\boxed{2x + 11 + \frac{30}{x-2}}$$

4. $(x^2 + 10) \div (x + 4)$

7. $(x^2 - 4x + 3) \div (x - 2)$ $x - 2 = 0$
 $x = 2$

$$\begin{array}{r|rrr} 2 & 1 & -4 & 3 \\ & \downarrow & 2 & -4 \\ \hline & 1 & -2 & -1 \end{array}$$

$$\boxed{x - 2 - \frac{1}{x-2}}$$

8. $(x^4 - 6x^3 - 40x + 33) \div (x - 7)$

$$9. (2x^4 - 6x^3 + x^2 - 3x - 3) \div (x-3)$$

$$\begin{aligned} x-3 &= 0 \\ x &= 3 \end{aligned}$$

$$\begin{array}{r|rrrrr} 3 & 2 & -6 & 1 & -3 & -3 \\ & \downarrow & & & & \\ & 6 & 0 & 3 & 0 & \\ \hline & 2 & 0 & 1 & 0 & -3 \end{array}$$

$$\boxed{2x^3 + x - \frac{3}{x-3}}$$

$$* 10. (y^3 + 6y^2 + 12y + 8) \div (y+2)$$

$$(y^3 + 6y^2 + 12y + 8) \div (y+2)$$

$$12. (t^3 - t^2 + t - 1) \div (t-1)$$

$$13. (x^2 + 4x - 14) \div (x+6)$$

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

$$\begin{array}{r|rrr} -6 & 1 & 4 & -14 \\ & \downarrow & & \\ & -6 & 12 & \\ \hline & 1 & -2 & -2 \end{array}$$

$$\boxed{x - 2 - \frac{2}{x+6}}$$

$$11. (x^3 - 8) \div (x-2)$$

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

$$\begin{array}{r|rrrr} 2 & 1 & 0 & 0 & -8 \\ & \downarrow & & & \\ & 2 & 4 & 8 & \\ \hline & 1 & 2 & 4 & 0 \end{array}$$

$$\boxed{x^2 + 2x + 4}$$

$$14. (x^4 - 81) \div (x-3)$$