

Synthetic Division

- Best used when dividing by \_\_\_\_\_ or \_\_\_\_\_

$$\div (x - 2) \quad \underline{\hspace{2cm}}$$

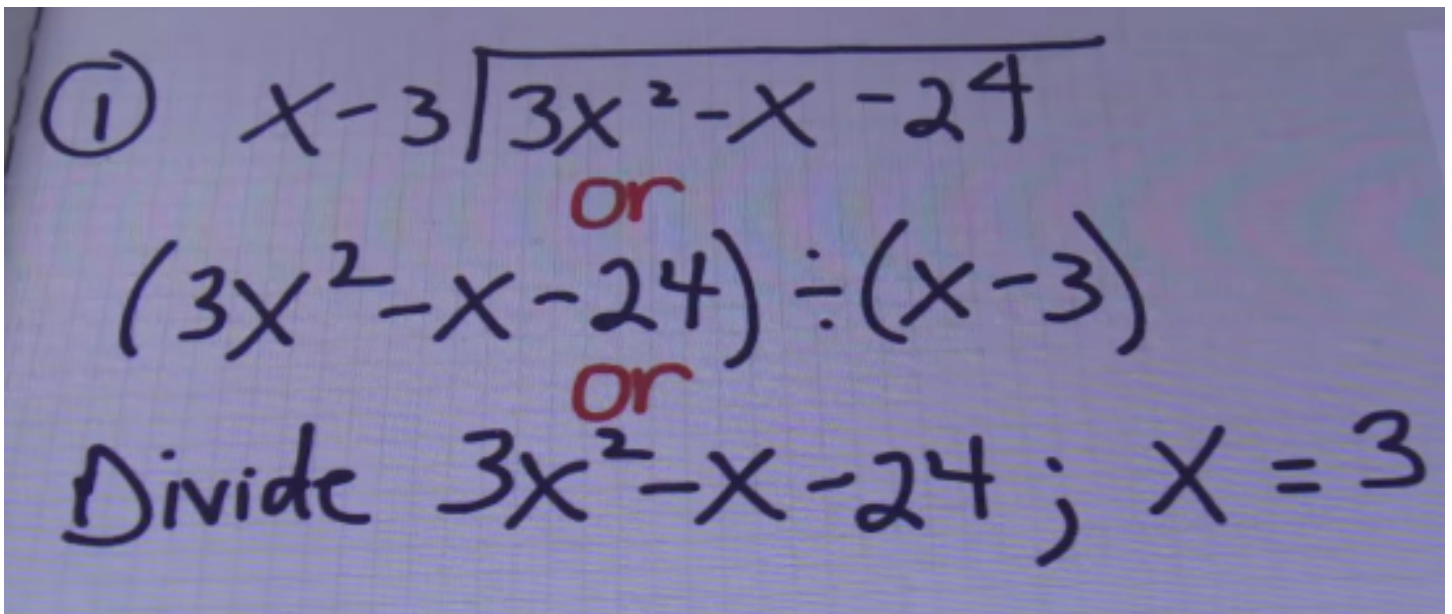
$$\div (x + 1) \quad \underline{\hspace{2cm}}$$

$$\div (3x - 5) \quad \underline{\hspace{2cm}}$$

$$\div (2x - 17) \quad \underline{\hspace{2cm}}$$

$$\div (x + 5) \quad \underline{\hspace{2cm}}$$

$$\div (x - 10) \quad \underline{\hspace{2cm}}$$



Work out examples in the space provided.

1.  $(3x^2 - x - 24) \div (x - 3)$

2.  $(5x^5 - 10x^4 - 4x^2 + 15x - 14) \div (x - 2)$

$$3. (7x^4 - 19x^3 - 9x^2 + 14x - 13) \div (x - 3)$$

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

Define "the remainder theorem" in your own words.

Divide using synthetic division.

$$1) (r^2 + 6r + 15) \div (r + 5)$$

$$2) (r^2 + 10r + 13) \div (r + 7)$$

$$3) (n^3 - 5n^2 - 33n - 37) \div (n - 9)$$

$$4) (x^3 + 6x^2 - 30x + 102) \div (x + 10)$$

$$5) (2v^3 - 20v^2 + 56v - 46) \div (v - 6)$$

$$6) (8r^3 - 49r^2 - 45r - 36) \div (r - 7)$$

$$7) (m^3 - 20) \div (m - 3)$$

$$8) (2k^3 - 13k^2 - 77k + 60) \div (k - 10)$$

**Divide.**

1)  $(r^2 + 6r + 15) \div (r + 5)$

$$r + 1 + \frac{10}{r + 5}$$

3)  $(n^3 - 5n^2 - 33n - 37) \div (n - 9)$

$$n^2 + 4n + 3 - \frac{10}{n - 9}$$

5)  $(2v^3 - 20v^2 + 56v - 46) \div (v - 6)$

$$2v^2 - 8v + 8 + \frac{2}{v - 6}$$

7)  $(m^3 - 20) \div (m - 3)$

$$m^2 + 3m + 9 + \frac{7}{m - 3}$$

2)  $(r^2 + 10r + 13) \div (r + 7)$

$$r + 3 - \frac{8}{r + 7}$$

4)  $(x^3 + 6x^2 - 30x + 102) \div (x + 10)$

$$x^2 - 4x + 10 + \frac{2}{x + 10}$$

6)  $(8r^3 - 49r^2 - 45r - 36) \div (r - 7)$

$$8r^2 + 7r + 4 - \frac{8}{r - 7}$$

8)  $(2k^3 - 13k^2 - 77k + 60) \div (k - 10)$

$$2k^2 + 7k - 7 - \frac{10}{k - 10}$$