

6. Write the polynomial equation if roots are:

1, 6, and -8

$$(x-1)(x-6)(x+8)$$

7. Solve for x: $x^2(x+5)(3x-4)=0$

$$x=0 \text{ mult. } 2, -5 \text{ and } 4/3$$

8. Solve for x: $x-3=\sqrt{x-1}$

$$(x-3)^2 = x-1$$

$$x^2 - 6x + 9 = x - 1$$

$$x^2 - 7x + 10$$

$$(x-5)(x-2)$$

$$\boxed{x=5}$$

$$\boxed{x=2}$$

9. Evaluate $\log_3 \frac{1}{9} = x$ (Hint: Set this equal to x. Then, convert into exponential form and solve for x).

$$3^x = \frac{1}{9}$$

$$\boxed{x = -2}$$

10. Evaluate $\log_5 25$ (See #9 for a hint)

$$5^x = 25$$

$$\boxed{x = 2}$$

11. Factor and simplify:

$$\frac{x^2 + 6x - 16}{x^2 - 4}$$

$$\frac{(x+8)(x-2)}{(x-2)(x+2)}$$

$$\boxed{\frac{x+8}{x+2}}$$

12. Factor and simplify (look for the GCF first!):

$$\frac{2x+12}{4x+4} \cdot \frac{6x^3+6x^2}{16x}$$

$$\frac{2(x+6)}{4(x+1)} \cdot \frac{6x^2(x+1)}{16x}$$

$$\frac{6x^2(x+1)}{16x}$$

13. Use synthetic division to evaluate:

a. $(x^4 - 5x^3 - 13x^2 + 53x + 60) \div (x+1)$

b. $(2y^4 - 5y^3 - 10y + 8) \div (y-3)$

on other sheet.

$$12x(x+6)$$

$$64$$

$$\frac{3x(x+6)}{16}$$

14. Solve by factoring:

a. $(9m^3 + 18m^2)(-4m - 8) = 0$

$$9m^2(m+2) - 4(m+2) = 0$$

$$(9m^2 - 4)(m+2) = 0$$

c. $x^3 + 5x^2 + 6x = 0$

$$x(x^2 + 5x + 6) = 0$$

$$x(x+3)(x+2) = 0$$

$$\boxed{x=0 \mid x=-3 \mid x=-2}$$

$$\boxed{m = \pm 2/3}$$

$$\boxed{m = -2}$$

b. $4r^6 - 20r^4 + 24r^2 = 0$

$$4r^2(r^4 - 5r^2 + 6)$$

$$4r^2(r^2 - 3)(r^2 - 2) = 0$$

d. $16x^4 - 81 = 0$

$$(4x^2 - 9)(4x^2 + 9) = 0$$

$$4x^2 - 9 = 0$$

$$4x^2 + 9 = 0$$

$$x^2 = \frac{9}{4}$$

$$x^2 = -\frac{9}{4}$$

$$\boxed{x = \pm \frac{3}{2}}$$

$$\boxed{x = \pm \frac{3i}{2}}$$

$$\boxed{r = \pm \sqrt{2}}$$

$$\boxed{r = \pm \sqrt{3}}$$

$$\boxed{r = 0}$$

13a.

$$\begin{array}{r|rrrrr} -1 & 1 & -5 & -13 & 53 & 60 \\ & 1 & -1 & 6 & 7 & -60 \\ \hline & 1x^3 & -6x^2 & -7x & 60 & 0 \end{array}$$

remainder

$$x^3 - 6x^2 - 7x + 60$$

13b.

$$\begin{array}{r|rrrrr} 3 & 2 & -5 & 0 & -10 & 8 \\ & 1 & 6 & 3 & 9 & -3 \\ \hline & 2x^3 & 1x^2 & 3x & -1 & 5 \end{array}$$

remainder

$$2x^3 + x^2 + 3x - 1 \text{ R } 5$$

