

Honors Math 3

Unit 3 – Day 7 Homework

Please do your work on a separate sheet of paper. You must show ALL work and attempt ALL problems to receive full credit. Please check your answers BEFORE class!

P. 370 #5, 7, 11, 13, 23, 24

Divide.

$$5. \frac{t^4 + 5t^3 - 2t - 7}{t + 5} = t^3 - 2 + \frac{3}{t-5}$$

$$7. \frac{2s^4 - 7s^3 + 7s + 6}{s - 3} = 2s^3 - s^2 - 3s - 2$$

$$11. \frac{2x^4 + x^3 - x - 2}{x + 1} = 2x^3 - x^2 + x - 2$$

$$13. \frac{2x^3 - 3x^2 + 4x - 2}{2x + 1} = x^2 - 2x + 3 + \frac{-5}{2x+1}$$

Determine  $k$  so that the first polynomial is a factor of the second.

23.  $x + 2$ ;  $2x^3 + 3x^2 + k$

$$k = 4$$

24.  $x - 2$ ;  $x^4 - 2x^3 + kx + 6$

$$k = -3$$

P. 375 #17-20 all, 29-32 all; P. 367 #30, 32

In Exercises 17–20, a root of the equation is given. Solve the equation.

17.  $x^3 + 3x^2 - 3x - 9 = 0$ ;  $\{-3, \pm\sqrt{3}\}$  18.  $2x^3 + 9x^2 + 7x - 6 = 0$ ;  $\{-2, -3, \frac{1}{2}\}$

19.  $t^3 - 11t + 20 = 0$ ;  $\{-4, 2 \pm i\}$  20.  $2z^3 + z^2 - 8z + 3 = 0$ ;  $\{\frac{3}{2}, -1 \pm \sqrt{2}\}$

#29-32, Solve each equation given the two indicated roots.

29.  $x^4 - 3x^3 - 8x^2 + 12x + 16 = 0$ ;  $\{-1, 4, \pm 2\}$  30.  $2x^4 - 5x^3 - 11x^2 + 20x + 12$ ;  $\{-2, 3, 2, \frac{1}{2}\}$

31.  $3x^4 + 5x^3 - 7x^2 - 3x + 2$ ;  $\{1, -\frac{2}{3}, -1 \pm \sqrt{2}\}$  32.  $2x^4 - 3x^3 - 3x - 2 = 0$ ;  $\{2, -\frac{1}{2}, \pm i\}$

30. When  $x^3 - 7x + 4$  is divided by the polynomial  $D(x)$ , the quotient is  $x^2 - 3x + 2$  and the remainder is  $-2$ . Find  $D(x)$ .  $x+3$

32. Find  $k$  so that when  $x^3 + kx^2 + k^2x + 14$  is divided by  $x + 2$ , the remainder is 0.  $k = -1$  or  $3$