

DCA 3 (A.APR.1) Review #1

1) A function and one of its factors is given. Use long division to determine another factor. You're your work.

$$f(x) = 36x^2 + 27x - 28; 3x + 4$$

$$\begin{array}{r} 12x - 7 \\ 3x + 4 \overline{) 36x^2 + 27x - 28} \\ \underline{-(36x^2 + 48x)} \\ -21x - 28 \\ \underline{-(-21x - 28)} \\ 0 \end{array}$$

$$\boxed{12x - 7}$$

2) Write the 4th term in the expansion of $(3y - 2)^6$. Show your work. 1 6 15 20 15 6 1

$$20(3y)^3(-2)^3$$

$$20(27y^3)(-8)$$

$$\boxed{-4320y^3}$$

3) Find the zeros of the polynomial, using synthetic division and factoring (or the Quadratic Formula). One zero has been given. Show all work.

$$f(x) = 6x^3 - 31x^2 + 3x + 10; \frac{2}{3}$$

$$\begin{array}{r|rrrr} \frac{2}{3} & 6 & -31 & 3 & 10 \\ & & 4 & -18 & -10 \\ \hline & 6 & -27 & -15 & 0 \\ \div 3 & 2 & -9 & -5 & \end{array}$$

$$2x^2 - 9x - 5 = 0$$

$$(x - 5)(2x + 1) = 0$$

$$x - 5 = 0$$

$$x = 5$$

$$2x + 1 = 0$$

$$2x = -1$$

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

Zeros: $-\frac{1}{2}, \frac{2}{3}, 5$

Exemplary.

1) A function and one of its factors is given. Use synthetic division and factoring to determine the zeros of the function, and graph the function. Darken the portion(s) of the curve that satisfy the inequality.

Function: $f(x) = x^3 + 4x^2 + x - 6$ Where is $f(x) \geq 0$? One factor of the function is $(x + 3)$.

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

$$\begin{aligned} x^2 + 1x - 2 &= 0 \\ (x - 1)(x + 2) &= 0 \\ x - 1 = 0 & \quad x + 2 = 0 \\ x = 1 & \quad x = -2 \end{aligned}$$

y-int (0, -6)

