answers

Chapter 3 Practice Quiz AAT

Use synthetic or long division for #1-3.

1. $(x^3-4x^2+2x+5)\div(x-2)$

$$\begin{array}{c|cccc} 2 & 1 & -4 & 2 & 5 \\ & \downarrow & 2 & -4 & -4 \\ \hline & 1 & -2 & -2 & 1 \end{array}$$

$$x^2-2x-2+\frac{1}{x-2}$$

2. $(2x^3+7x^2-4x+7)\div(x^2+2x-1)$

$$\begin{array}{r} 2x+3 \\ x^2+2x-1 \overline{)\,2x^3+7x^2-4x+7} \\ -(2x^3+4x^2-2x) \\ \hline 3x^2-2x+7 \\ -(3x^2+6x-3) \\ \hline -8x+10 \end{array}$$

$$2x+3+\frac{-8x+10}{x^2+2x-1}$$

3. $(2x^3+4x^2-5)\div(x+3)$

$$\begin{array}{c|cccc} -3 & 2 & 4 & 0 & -5 \\ & \downarrow & -6 & 6 & -18 \\ \hline & 2 & -2 & 6 & -23 \end{array}$$

$$2x^2-2x+6+\frac{-23}{x+3}$$

4. Describe the transformations: $y=-6(x+7)^2-1$

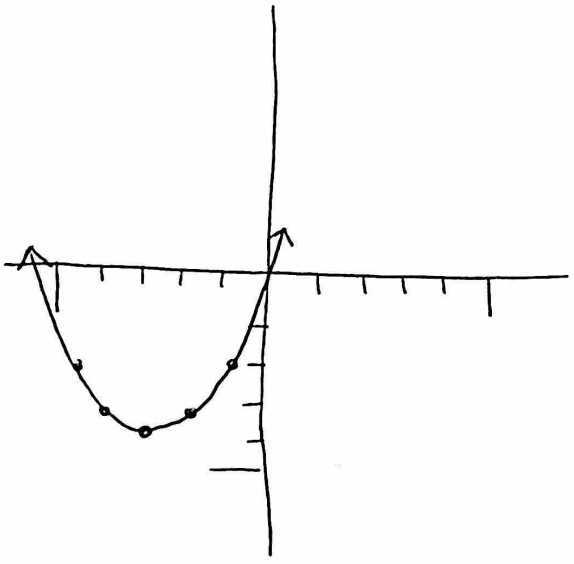
reflect over x-axis
VD 6
L 7
D 1

5. Is $x-4$ a factor of $12x^3-11x^2+9x+18$? How do you know?

$$\begin{array}{c|cccc} 4 & 12 & -11 & 9 & 18 \\ & \downarrow & 48 & 148 & 628 \\ \hline & 12 & 37 & 157 & 646 \end{array}$$

← no R = 646

6. Graph $y=0.5(x+3)^2-4$



7. Find the equation of the graph below:

$y=a(x-1)^2+4$

$5.04=a(3-1)^2+4$

$1.04=4a$

$0.26=a$

$$y=0.26(x-1)^2+4$$

$x^3 - 19x + 30$

8. Fully factor ~~$x^3 - 19x + 30$~~ given that one factor is $x-3$

3	1	0	−19	30
	↓	3	9	−30
	1	3	−10	0

$x^2 + 3x - 10$

$(x+5)(x-2)(x-3)$

9. Fully factor $6x^3 + 7x^2 - 1$ given a root is $x = -\frac{1}{2}$

−½	6	7	0	−1
	↓	−3	−2	1
	6	4	−2	0

$6x^2 + 4x - 2$

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

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

$3x(x+1) - 1(x+1)$

$2(x+1)(3x-1)(x+1/2)$

10. The area for Johnny's farm uses the equation: $f(x) = -3x^2 + 125x + 12$ where x is the side length of the field. What should Johnny make the field side length be if he wants to *maximize* the area of the field?

$x = -b/2a$ $\quad x = \frac{-125}{2(-3)} = 20.8$

a. What would the max area be?

$f(20.8) = 1,314.08$

11. The cost equation for Mrs. Brown's new business is $c(x) = 4x^2 - 72x + 3$. How much should she try to pay for the tank tops she sells in order to *minimize* her cost?

$x = \frac{-(-72)}{2(4)} =$ $9 | tank top