10. $f(x) = 2x^3 - 15x^2 + 34x - 21$ given that $(x - 1)$ is a factor.

given ↓

$f(x) = (x-1)(2x-7)(x-3)$

1	2	-15	34	-21
	↓	2	-13	21
	2	-13	21	0

$(2x^2 - 13x + 21) = (2x-7)(x-3)$

Given polynomial function *f* and a zero of *f*, find the other zeros.

11. $f(x) = x^3 + 8x^2 + 5x - 14$ given that -2 is one of the zeros.

-2	1	8	5	-14
		-2	-12	14
	1	6	-7	0

$f(x) = (x+2)(x^2+6x-7)$

$= (x+2)(x+7)(x-1)$

$x+2=0$ $\quad x+7=0$ $\quad x-1=0$

$x=-2$ $\quad x=-7$ $\quad x=1$

List the possible rational zeros of the function using the rational zeros theorem.

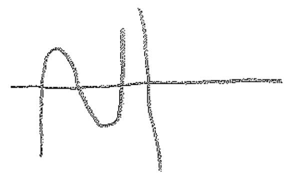
12. $f(x) = 2x^3 + 3x^2 - 11x - 6$

$p=-6 \rightarrow \dfrac{\pm1, \pm2, \pm3, \pm6}{\pm1, \pm2} = \pm1, \pm2, \pm3, \pm6, \pm\frac{3}{2}$

$q=2$

Find all real zeros of the function.

13. $p(x) = 2x^3 + 20x^2 + 62x + 60$



Look at graph to narrow choices:
(-2 looks like it might work)

-2	2	20	62	60
		-4	-32	-60
	2	16	30	0

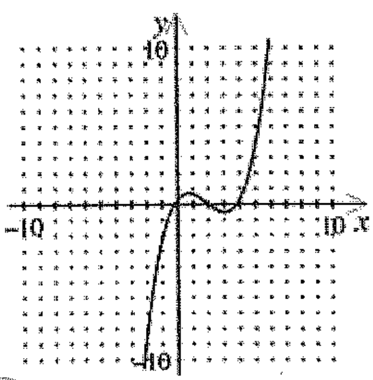
$p(x) = (x+2)(2x^2+16x+30) = 2(x+2)(x^2+8x+15)$

↑ factor out a 2

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

$x = -2, -3, -5$

a ____ 14. Use the graph to approximate the real zeros of the function. Round to the nearest integer.



Look for the x-intercepts

(a.) 0, 2, 4 b. –4, –2, 0 c. 2, –4, –2, 0 d. 2

Name: KEY worked out solutions available at: fur.ly/96ai Practice

Chapter 5 Practice Test

Simplify the expression.

1. $\left(a^2b^2\right)^5 = a^{10}b^{10}$

2. $\left(-2a^2b^3c^4\right)^4 = (-2)^4 a^8 b^{12} c^{16} = 16a^8b^{12}c^{16}$

3. Use synthetic substitution to evaluate $f(s) = 6s^3 - 6s^2 - 2s + 2$ when $s = 2$.

$$\begin{array}{c|cccc} 2 & 6 & -6 & -2 & 2 \\ & \downarrow & 12 & 12 & 20 \\ \hline & 6 & 6 & 10 & 22 \end{array}$$

Find the sum or difference.

4. $\left(8h^3 - 8h + 8\right) - \left(7h^3 + 7h + 1\right) = 8h^3 - 8h + 8 - 7h^3 - 7h - 1 = h^3 - 15h + 7$

↑ remember to distribute the minus sign

5. $\left(9a^5 - 9a^4 + 1\right) + \left(6a^5 - 6a + 7\right) = 9a^5 - 9a^4 + 1 + 6a^5 - 6a + 7$
$= 15a^5 - 9a^4 - 6a + 8$

Find the product.

6. $(k-3)\left(k^2 + k + 2\right) = k^3 + k^2 + 2k - 3k^2 - 3k - 6$
$= k^3 - 2k^2 - k - 6$

Factor the polynomial completely.

7. $2b^3 - 4b^2 + 10b = 2b(b^2 - 2b + 5)$

Find the real-number solutions of the equation.

8. $v^3 - 2v^2 = 0 \quad = v^2(v-2) = 0$ → $v = 0$ or $v - 2 = 0$
↑ $v = 0$
$v = 0$ or 2

Given polynomial *f(x)* and a factor of *f(x)*, factor *f(x)* completely.

9. $f(x) = x^3 + 4x^2 + x - 6$ given that $(x + 2)$ is a factor.

$$\begin{array}{c|cccc} -2 & 1 & 4 & 1 & -6 \\ & \downarrow & -2 & -4 & 6 \\ \hline & 1 & 2 & -3 & 0 \end{array}$$

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

$f(x) = (x+2)(x+3)(x-1)$