Q2 Review Honors Math 2 Name Key Period___

1. What is the vertex of $f(x) = 2(x - 4)^2 - 6$? V: (4, -6)	2. What are the x-intercepts of $f(x) = 2(x - 7)(x + 3)$? (7, 0) (-3, 0)
3. Given $f(x) = ax^2 + bx + c$, what does the $x = -b/2a$ represent? axis of symmetry and x-value of vertex	4. Find the axis of symmetry $F(x) = 2x^2 + 8x - 2$ $x = \frac{-8}{2(2)} = \frac{-8}{4} = -2$ $x = -2$
5. Factor completely. $x^2 - 7x + 10$ $(x-2)(x-5)$	6. Factor completely. $12x^2 + 19x - 18$ $(4x+9)(3x-2)$
7. Factor completely. $8x^3 + 1$ $(2x+1)(4x^2-2x+1)$	8. Factor completely. $n^2 - 64$ $(n+8)(n-8)$
9. Factor completely. $2x^2 + 7x - 15$ $(2x-3)(x+5)$	10. Factor completely. $2x^3 - 7x^2 - 8x + 28$ $x^2(2x-7) - 4(2x-7)$ $(2x-7)(x^2-4)$ $(2x-7)(x+2)(x-2)$

11. Solve.

$$\frac{2(m-7)^2}{2} = \frac{16}{2}$$

$(m-7)^2 = 8$

$m-7 = \pm\sqrt{8}$

$m = 7 \pm 2\sqrt{2}$

12 Solve.

$$x^2 + 12x - 45 = 0$$

$(x+15)(x-3)=0$

$x=-15 \quad x=3$

13. Solve.

$$r^2 - 13r + 42 = 0$$

$(x-7)(x-6)=0$

$x=7 \quad x=6$

14. Solve.

$$3x^3 - 4x^2 - 27x + 36 = 0$$

$x^2(3x-4) - 9(3x-4) = 0$

$(3x-4)(x^2-9)=0$

$x = \frac{4}{3} \quad x = \pm 3$

15. . Evaluate

$f(x) = x^3 - 2x^2 + 5x + 6$

for $x = -1$.

synthetic

$$\begin{array}{r|rrrr} -1 & 1 & -2 & 5 & 6 \\ & \downarrow & -1 & 3 & -8 \\ \hline & 1 & -3 & 8 & \boxed{-2} \end{array}$$

answer

or direct substitution

$f(x) = (-1)^3 - 2(-1)^2 + 5(-1) + 6$

$= -2$

16. Divide $x^3 + 5x^2 - 7x + 2$ by $x - 2$ using synthetic division.

$$\begin{array}{r|rrrr} 2 & 1 & 5 & -7 & 2 \\ & \downarrow & 2 & 14 & 14 \\ \hline & 1 & 7 & 7 & 16 \end{array}$$

$x^2 + 7x + 7 + \frac{16}{x-2}$

17. Describe the **end behavior** of the polynomial function by completing the statements.

$$f(x) = -2x^3 + x^2 - 5$$

$x \to -\infty \; f(x) \to \infty$

$x \to \infty \; f(x) \to -\infty$

18. $x - 5$ is a factor of $f(x) = x^3 - 11x^2 + 14x + 80$

Factor $f(x)$ completely.

$$\begin{array}{r|rrrr} 5 & 1 & -11 & 14 & 80 \\ & \downarrow & 5 & -30 & -80 \\ \hline & 1 & -6 & -16 & 0 \end{array}$$

$(x-5)(x^2-6x-16)$

$(x-5)(x-8)(x+2)$