Name: _____ Date: _____

EOC Practice Problems

Remember factor out GCF first always!

1. Factor the expression $16a^2 - 81$.

$(4a-9)(4a+9)$

2. Factor the expression $12x^2 + 14x - 6$.

$2(6x^2+7x-3)$ mult sub mult

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

$-2x$ $+9x$

$6x^2$: $2x \cdot 3x$, $6x \cdot 1x$ | 3: $1 \cdot 3$

Solve using the best method:

When you square Root both sides Remember ±

3. $3x^2 - 147 = 0$

$+147 \quad +147$

$\frac{3x^2}{3} = \frac{147}{3}$

$\sqrt{x^2} = \sqrt{49}$

$x = \pm 7$

4. $x^2 - x = 12$

$-12 \quad -12$

$x^2 - x - 12 = 0$ mult sub mult

$(x+3)(x-4) = 0$

$x+3=0 \quad x-4=0$

$x=-3$ & $x=4$

5. $5x^2 - 6x - 8 = 0$

$\frac{-(-6) \pm \sqrt{(-6)^2-4(5)(-8)}}{2(5)}$

$\frac{6 \pm \sqrt{36+160}}{10}$

$\frac{6 \pm \sqrt{196}}{10}$ $\frac{6+14}{10} = \frac{20}{10} = 2$ $\frac{6-14}{10} = \frac{-8}{10} = -\frac{4}{5}$

6. What is a common factor for the expression $24x^2 + 16x + 144$?

$8(3x^2+2x+18)$

A. 16 B. 8x C. $3x^2 + 2x + 18$ D. $8(x-2)(3x^2+9)$ $= -18$

7. Which of these shows the complete factorization of $6x^2y^2 - 9xy - 42$?

$3(2x^2y^2 - 3xy - 14)$ mult sub mult

no no

A. $3(2xy^2 - 7)(xy^2 + 2)$

C. $3(2xy - 7)(xy + 2)$

B. $(3xy + 6)(2xy - 7)$

D. $(3xy^2 + 6)(2xy^2 - 7)$

8. What are the zeros of the function represented by the quadratic expression $2x^2 + x - 3$?

$2x^2+x-3=0$

$(2x+3)(x-1)=0$

$3x$ $-2x$ $1x$ ✓

A. $x = -3/2$ and $x = 1$

B. $x = -2/3$ and $x = 1$

C. $x = -1$ and $x = 2/3$

D. $x = -1$ and $x = -3/2$

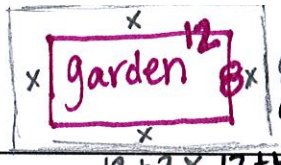
9. Which of these is the result of completing the square for the expression $x^2 + 8x - 30$?

$(\frac{8}{2})^2 = 16$

$x^2+8x+16 \quad -30-16$

$(x+4)^2 - 46$

A. $(x+4)^2 - 30$ B. $(x+4)^2 - 46$ C. $(x+8)^2 - 30$ D. $(x+8)^2 - 94$



8+4=12

12+4=16

10. A garden measuring 8ft by 12ft will have a walkway around it. The walkway has a uniform width, and the area covered by the garden and the walkway is 192 square feet. What is the width of the walkway?

$(8+2x)(12+2x)=192$

$96+16x+24x+4x^2=192$

$4x^2+40x+96=192$

$-192 \quad -192$

$4x^2+40x-96=0$

poly solv

$x_1=2$

$x_2=-12$

A. 2ft B. 3.5ft C. 4ft D. 6ft

11. The formula for the area of a circle is $A = \pi r^2$. Which equation shows the formula in terms of r?

$\frac{A}{\pi} = \frac{\pi r^2}{\pi}$ $\sqrt{R^2} = \sqrt{\frac{A}{\pi}}$

No ± √ on this one because Radius ≠ neg.

$R=\sqrt{\frac{A}{\pi}}$

A. $r = \frac{2A}{\pi}$ B. $r = \frac{\sqrt{A}}{\pi}$ C. $r = \sqrt{\frac{A}{\pi}}$ D. $r = \frac{A}{2\pi}$

12. What are the solutions to the equation $2x^2 - 2x - 12 = 0$?

Remember Solutions, Roots, Zeros, & x-intercepts all mean same thing

$2(x^2-x-6)=0$

$2(x+2)(x-3)=0$

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

$x-3=0 \quad x=3$

A. x = -4, x = 3 B. x = -3, x = 4 C. x = -2, x = 3 D. x = -6, x = 2

Could also use poly solve unless on non-calc.

13. What are the solutions to the equation $6x^2 - x - 40 = 0$

Could use poly solv unless on non-calc

$6x \cdot 1x \quad 1 \cdot 40$

$2x \cdot 3x \quad 2 \cdot 20$

$4 \cdot 10$

$5 \cdot 8$

$(2x+5)(3x-8)=0$

$+15x$

$-16x$

$2x+5=0$

$2x=-5$

$x=-5/2$

$3x-8=0$

$3x=8$

$x=8/3$

A. x = -8/3, x = -5/2 C. x = -8/3, x = 5/2

B. x = 5/2, x = 8/3 D. x = -5/2, x = 8/3

14. An object is thrown in the air with an initial velocity of 5 m/s from a height of 9m. The equation $h(t) = -4.9t^2 + 5t + 9$ models the height of the object in meters after t seconds.

$0 = -4.9t^2+5t+9$

Poly solve ~~$x_1=-.937$~~ & $x_2=1.958$ $h(t)=0$

About how many seconds does it take for the object to hit the ground? Round your answer to the nearest tenth of a second.

A. 0.940 secs B. 1.50 secs C. 2.00 secs D. 9.00 secs

15. What explicit expression can be used to find the next term in this sequence?

2, 8, 18, 32, 50, …

2, 4, 6, 8

8, 10, 12, 14

2, 8, 18, 32, 50

3, 9, 19, 33, 51

A. ~~2n~~ B. ~~2n + 6~~ C. $2n^2$ D. ~~$2n^2 + 1$~~

16. Which of these is an even function?

A. $f(x) = 5x^2 - x^1$ neither (even, odd)

B. $f(x) = 3x^3 + x^1$ odd (odd, odd)

C. $f(x) = 6x^2 - 8x^0$ even (even, even)

D. $f(x) = 4x^3 + 2x^2$ neither (odd, even)

negative = reflection x
integer = vertical stretch

17. Which statement BEST describes how the graph of $g(x) = -3x^2$ compares to the graph of $f(x) = x^2$?

A. The graph of g(x) is a vertical stretch of f(x) by a factor of 3.
B. The graph of g(x) is a reflection of f(x) across the x-axis.
C. The graph of g(x) is a vertical shrink of f(x) by a factor of 1/3 and a reflection across the x-axis.
D. The graph of g(x) is a vertical stretch of f(x) by a factor of 3 and a reflection across the x-axis.

18. What is the end behavior of the graph of $f(x) = -0.25x^2 - 2x + 1$?

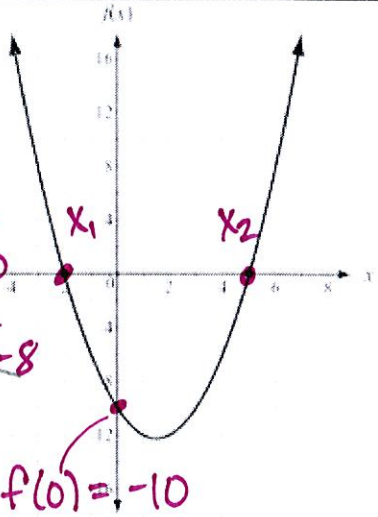
parabola opens down like frown

"spirit fingers"

down down

A. As x increases, f(x) increases. As x decreases, f(x) decreases.
B. As x increases, f(x) decreases. As x decreases, f(x) decreases.
C. As x increases, f(x) increases. As x decreases, f(x) increases.
D. As x increases, f(x) decreases. As x decreases, f(x) increases.

19. Use the graph to answer the question.



Which function is shown in the graph?

A. $f(x) = x^2 - 3x - 10$ $x_1 = -2$ $x_2 = 5$ $f(0) = -10$
B. $f(x) = x^2 + 3x - 10$ $x_1 = 2$ $x_2 = -5$ $f(0) = -10$
C. $f(x) = x^2 + x - 12$ $x_1 = 3$ $x_2 = -4$ $f(0) = -12$
D. $f(x) = x^2 - 5x - 8$ $x_1 = -1.27$ $x_2 = 6.27$ $f(0) = -8$

Remember x_1 & x_2 are solutions, x-intercepts, solutions, & zeros
$f(0)$ = y-intercept OR $(0, y)$

20. The function $f(t) = -16t^2 + 64t + 5$ models the height of a ball that was hit into the air, where t is measured in seconds and h is the height in feet. This table represents the height, g(t), of a second ball that was thrown into the air. $0 = -16t^2 + 64t + 5$ $x_1 = -.07$ & $x_2 = 4.07$ ft

Which statement BEST compares the length of time each ball is in the air?

A. The ball represented by f(t) is in the air for about 5 seconds, and the ball represented by g(t) is in the air for about 3 seconds.
B. The ball represented by f(t) is in the air for about 3 seconds, and the ball represented by g(t) is in the air for about 5 seconds. no
C. The ball represented by f(t) is in the air for about 3 seconds, and the ball represented by g(t) is in the air for about 4 seconds.
D. The ball represented by f(t) is in the air for about 4 seconds, and the ball represented by g(t) is in the air for about 3 seconds.

Time, t (in seconds)	Height, g(t) (in feet)
0	4
1	36
2	36
3	4

g(t)