

Factor the following: *Don't forget GCF *

1. $3x^2 - 6x =$ _____

2. $6x^2 - 10 =$ _____

3. $x^2 - 3x - 4 =$ _____

4. $x^2 - 8x + 12 =$ _____

5. $x^2 - 16 =$ _____

6. $x^2 - 81 =$ _____

7. $x^2 + 16 =$ _____

8. $x^2 - 4 =$ _____

9. $x^4 - 1 =$ _____

10. $x^4 - 16 =$ _____

11. $x^4 - 81 =$ _____

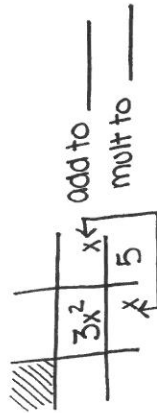
12. $x^2 - 25 =$ _____

13. $x^2 + 6x + 4x + 24 =$ _____

14. $x^2 - 5x =$ _____

15. $3x^2 - 16x + 5 =$ _____

16. $2x^2 + 3x - 5 =$ _____



17. $5x^2 - 8x + 3 =$ _____

18. $-7 - x - 21 - 2x^2 =$ _____

Solve the following:

19. $3x^2 - 6x = 0$ $x =$ _____

20. $6x^2 - 10 = 0$ $x =$ _____

21. $x^2 - 3x = 4$ $x =$ _____

22. $x^2 - 8x + 12 = 0$ $x =$ _____

23. $x^2 - 16 = 0$ $x =$ _____

24. $x^2 = 81$ $x =$ _____

25. $x^4 - 1 = 0$ $x =$ _____

26. $x^4 - 16 = 0$ $x =$ _____

27. $x^2 + 8 = 0$ $x =$ _____

28. $2x^2 + 3x = 5$ $x =$ _____

19. $x = 0, x = 2$

20. $x = \pm \sqrt{\frac{5}{3}}$

19. $x = 0, x = 2$

18. $(2x - 7)(2x + 1)$

17. $(5x - 3)(x - 1)$

16. $(2x + 5)(x - 1)$

15. $(3x - 1)(x - 5)$

9. $(x^2 + 1)(x - 1)(x + 1)$

10. $(x^2 + 4)(x - 2)(x + 2)$

11. $(x^2 + 9)(x + 3)(x - 3)$

12. $(x - 5)(x + 5)$

13. $(x + 4)(x + 4)$

14. $x(x - 5)$

7. Prime

25. $x = \pm \sqrt{-4}$

20. $x = 2, -2$

$(x = \pm \sqrt{-1})$

25. $x = 1, -1$

24. $x = 9, -9$

23. $x = 4, -4$

22. $x = 6, 2$

27. $x = -1$

28. $x = -\frac{5}{2}$

$x = 1$

Answers:

1. $3x(x - 2)$

2. $2(3x^2 - 5)$

3. $(x - 4)(x + 1)$

4. $(x - 6)(x - 2)$

5. $(x - 4)(x + 4)$

6. $(x - 9)(x + 9)$

7. Prime

9. $(x - 2)(x + 2)$

9. $(x^2 + 1)(x - 1)(x + 1)$

10. $(x^2 + 4)(x - 2)(x + 2)$

11. $(x^2 + 9)(x + 3)(x - 3)$

12. $(x - 5)(x + 5)$

13. $(x + 4)(x + 4)$

14. $x(x - 5)$

15. $(3x - 1)(x - 5)$

16. $(2x + 5)(x - 1)$

17. $(5x - 3)(x - 1)$

18. $(2x - 7)(2x + 1)$

19. $x = 0, x = 2$

20. $x = \pm \sqrt{\frac{5}{3}}$

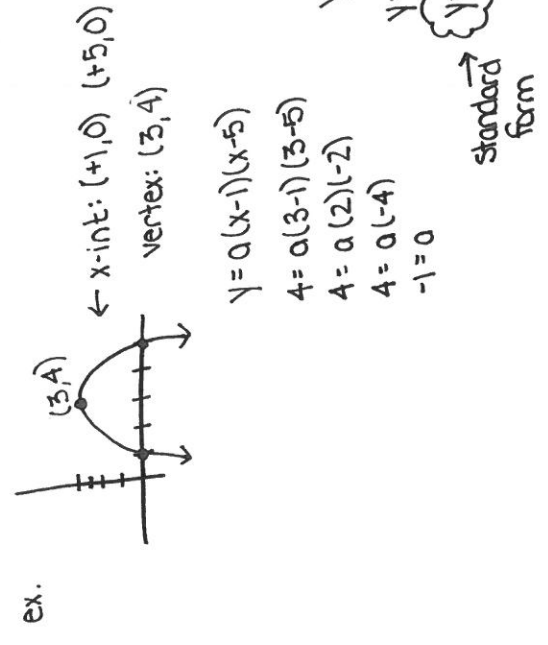
21. $x = 4, -1$

27. $x = -1$

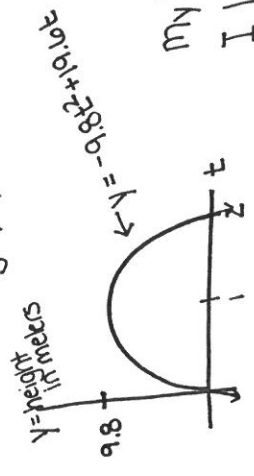
28. $x = -\frac{5}{2}$

$x = 1$

If I have a graph, I can find vertex, x-int, y-int, equation.



If I have a graph, I can talk about its "story."



My "Story":

I launched a rocket straight up from the ground. 1 second later, the rocket hit its max height (9.8m). 2 seconds into its flight, the rocket landed.

When did rocket get to its max height? _____
 What was max height? _____
 When did rocket land? _____

If I have a quadratic function, I can find:

x-intercepts, y-intercept, vertex, axis of symmetry, a sketch of the graph
 max or min

ex: $y = x^2 + 6x + 5$... factor & set to 0 to find x-int
 $(x+5)(x+1) = 0$
 $x = -5$ $x = -1$
 $(-5, 0)$ $(-1, 0)$

... halfway between roots is axis of symmetry (or use $x = -b/2a$)

$x = -3$ is axis of symmetry

... plug in axis of symmetry value to find y-value of vertex

$y = x^2 + 6x + 5$
 $y = (-3)^2 + 6(-3) + 5$
 $= 9 - 18 + 5$
 $= -4$
 $(-3, -4)$ is vertex

... plug in $x = 0$ to find y-intercept

$y = x^2 + 6x + 5$
 $y = 0 + 0 + 5$
 $= 5$
 $(0, 5)$ is y-int

... use all of the above to sketch plotting at least 5 points if possible

