

HW1: Unit 1 Test Review #1

Perform the indicated operation. Write your answer in standard form.

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

2. $(x + 5)(x^2 - 2x + 25)$

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

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

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

6. $(6x^4 - 4x^2 + 5x) + (3x^2 - 9x + 4)$

7. $(6y^3 + 13y^2 - 10y - 24) \div (y + 2)$

8. $(2h^4 - h^3 + h^2 + h - 3) \div (h^2 - 1)$

9. $(4a^6 + 10a^5 + 3a^2 - a - 1) \div (2a + 1)$

State the following:

- a. Degree
- b. Leading coefficient
- c. Number of possible zeros
- d. Number of possible turns
- e. End behavior

10. $5x^6 - 3x^4 + x^3 - 9x^2 + 1$

11. $f(x) = -(x-2)^3(x+1)^2(x^2+4)$

Factor. Show all necessary work.

12. $x^4 - 16$

13. $x^3 + 8y^3$

14. $25x^4 - 9y^2$

15. $6x^2 + 5x - 4$

16. $16x^4 - 54x$

17. $9x^2 + 1$

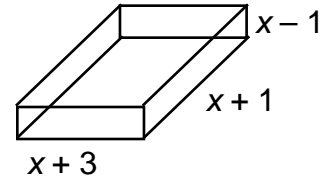
Solve each polynomial equation. Show all work.

18. $x^3 + 2x^2 - 35x = 0$

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

20. $4x^4 - 25x^2 + 36 = 0$

21. The volume of the prism is 315 cubic inches. Step, but DO NOT SOLVE the equation for finding x .



22. Solve the zeros of the function given $x + 1$ is a factor of $f(x) = x^3 - 4x^2 + x + 6$.

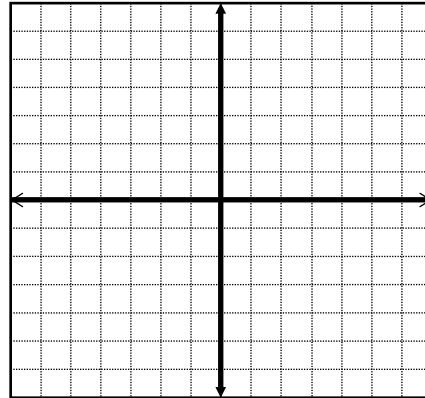
Given the following zeros, write the polynomial function, $f(x)$.

23. $x = 1, -3$

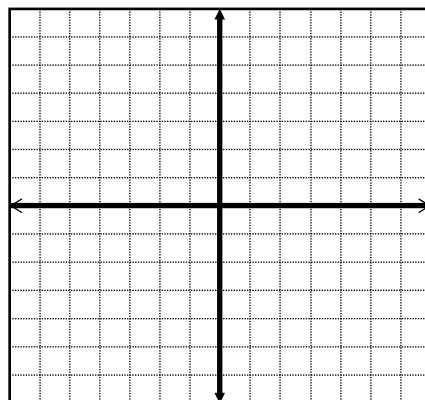
24. $x = 0, 2, -5$

Graph the following. State the end behavior, zeros and y-intercept. Show all work.

25. $f(x) = x^3 - x^2 - 4x + 4$



26. $f(x) = -x^4 + 2x^2 - 1$



Answers

1. $15x^2 - 15x$
2. $x^3 + 3x^2 + 15x + 125$
3. $25x^2 - 9$
4. $2x^3 + 14x^2 - 2x - 14$
5. $x^2 + 8x - 5$
6. $6x^4 - x^2 - 4x + 4$
7. $6y^2 + y - 12$
8. $2h^2 - h + 3$
9. $2a^5 + 4a^4 - 2a^3 + a^2 + a - 1$
10. a. 6th, b. 5, c. 6, d. 5, e. both up
11. a. 7th, b. -1, c. 7, d. 6, e. up left, down right
12. $(x-2)(x+2)(x^2+4)$
13. $(x+2y)(x^2-2xy+4y^2)$
14. $(5x^2-3y)(5x^2+3y)$
15. $(3x+4)(2x-1)$
16. $2x(2x-3)(4x^2+6x+9)$
17. Not factorable
18. $x = 0, -7, 5$
19. $x = 2, -1, 1$
20. $x = -\frac{2}{3}, \frac{2}{3}, -2, 2$
21. $(x+3)(x+1)(x-1) = 315$
22. $x = -1, 2, 3$
23. $f(x) = x^2 + 2x - 3$
24. $f(x) = x^3 + 3x^2 - 10x$
25. End behavior: down left, up right
Zeros: $-2, 1, 2$
y-intercept: 4
26. End behavior: both down
Zeros: $-1, 1$
y-intercept: -1

