Name: _____

Period:_____

Precal: 1.1 Worksheet

Find the indicated set if A={1,2,3,4,5,6,7}, B={2,4,6,8}, and C={7,8,9,10}.

1. $A \cup B$
2. $A \cap B$
3. $B \cup C$
4. $B \cap C$
5. $A \cup C$
6. $A \cap C$
7. $A \cup B \cup C$
8. $A \cap B \cap C$

Express the interval in terms of inequalities and then graph the interval.

9. (-3,0)

10. (2,8]

11. [2,8)

12. [3, ∞)

13. (-∞,1)

14. (-2,3)

15. [-3, ∞)

16. (-∞, 1]

Express the inequality in interval notation and then graph the corresponding interval.

17. $x \leq 1$

20. $1 \leq x \leq 2$

18. $-2 < x \leq 1$

19. $x > -1$

21. $x \geq -5$

22. $-5 < x < 2$

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Precal: 1.2 worksheet

Simplify the expression and eliminate any negative exponent(s).

1. 5^3

2. $\left(\frac{3}{7}\right)^0$

3. 2^{-3}

4. $\frac{2^5}{2^2}$

5. 3^{-2}

6. $\frac{7^6}{7^4}$

7. $6^2 \bullet \left(\frac{1}{6^3}\right)$

8. $\frac{5^{-3}}{2^{-3}}$

9. $\frac{2^{-2}}{4^{-2}}$

10. $x^9 x^{-5}$

11. $(3y^2)(4y^5)$

12. $(12x^2y^4)\left(\frac{1}{2}x^5y\right)$

13. $\frac{x^9(2x)^4}{x^3}$

14. $\frac{x^{-3}b^4}{x^{-5}b^5}$

15. $\frac{10x^3y^{-2}z^{-5}}{2x^{-2}yz^{-3}}$

16. $\frac{(2x^2y^{-3})^3}{(3x^{-3}y)^2}$

17. $\frac{(5x^3)^2}{(x^4)^3}$

18. $\frac{20x^{-4}y^2z^{-5}}{10xy^5z^{-7}}$

Simplify the expression and eliminate any negative exponents.

19. $\sqrt{81}$

20. $\sqrt{45}$

21. $\sqrt{32}$

22. $\sqrt{72}$

23. $\sqrt{32}+\sqrt{18}$

24. $\sqrt{75}+\sqrt{27}$

25. $\sqrt[4]{16}$

26. $\sqrt[3]{\frac{8}{27}}$

27. $\sqrt[3]{-\frac{1}{64}}$

28. $\sqrt[5]{96}$

29. $36^{\frac{1}{2}}$

30. $121^{\frac{1}{2}}$

31. $\left(\frac{8}{125}\right)^{\frac{2}{3}}$

32. $\left(\frac{1}{32}\right)^{\frac{1}{5}}$

33. $\left(16x^4y^{10}\right)^{\frac{1}{2}}$

34. $\left(25x^8y^{12}\right)^{\frac{1}{2}}$

35. $\left(27x^9y^{12}\right)^{\frac{1}{3}}$

36. $\left(125x^6y^{18}\right)^{\frac{2}{3}}$

37. $\left(8x^3y^{15}\right)^{\frac{2}{3}}$

38. $\frac{1}{\sqrt{3}}$

39. $\sqrt{\frac{x}{5}}$

40. $\frac{1}{\sqrt{2}}$

Name:

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Precal: 1-3 worksheet

Perform the indicated operation and simplify. Then find its degree.

1. $(3x+8)+(2x-14)$
2. $(7+x)-(3x-12)$
3. $(3x^2+x+1)+(2x^2-3x-5)$
4. $5(2x^2+3x+7)+2(4x^2-8x-1)$
5. $(3x^2+x+1)-(2x^2-3x-5)$
6. $4(x^2+x-8)-3(2x^2-5x-10)$
7. $(3x-2)(5x+1)$
8. $(x+3)(x-2)$
9. $(2x+3)(5x^2+6x-8)$

Factor out the common factor (GCF).

10. $2x^2+10x$
11. $3x^3-12x$
12. $2x^3-8x^2+22x$
13. $6x^2+15x-21$

Factor the trinomial.

14. x^2+2x-3
15. $x^2-8x+15$
16. x^2+x-12
17. $x^2+10x+21$
18. $x^2-4x-12$
19. $2x^2+x-3$
20. $10x^2-13x-3$
21. $3x^2+7x+2$

22. $4x^2 - 9x - 9$

23. $5x^2 - 3x - 2$

Use a special factoring formula to factor.

24. $x^2 - 49$

25. $x^3 + 27$

26. $4x^2 - 25$

27. $8x^3 - 125$

28. $9x^2 - 16$

29. $27x^3 + 1$

30. $49x^2 - 100$

31. $x^3 - 8$

Factor the expression by grouping.

32. $x^3 + 4x^2 + x + 4$

33. $x^5 + x^4 + x + 1$

34. $2x^3 + x^2 - 6x - 3$

35. $3x^3 - x^2 + 6x - 2$

Factor the expression completely (Hint: factor GCF out first).

36. $2x^2 - 4x - 16$

37. $8x^2 - 50$

38. $10x^2 + 25x + 15$

39. $8x^3 + 125$

40. $9x^2 - 36x - 45$

Name:

Period:

Precal: 1.4 worksheet

Find the domain of the expression.

1. $\frac{2x-1}{x+4}$

2. $\frac{3x+5}{2x}$

3. $2x^2+3x-8$

4. $\frac{3}{\sqrt{x+2}}$

5. $\frac{2x-5}{15}$

6. $\frac{x-1}{\sqrt{x-1}}$

Simplify the rational expression.

7. $\frac{x^2+6x+8}{x^2+5x+4}$

8. $\frac{x^2-x-2}{x^2-1}$

9. $\frac{x^2-x-12}{x^2+5x+6}$

10. $\frac{3x^2-15x}{x^2-25}$

11. $\frac{10x^2-20x}{5x^2-10x}$

12. $\frac{x^2-16}{x^2-x-20}$

Perform the given operation. Then simplify.

13. $\frac{x^2-x-12}{x^2-9} \bullet \frac{x+3}{x-4}$

14. $\frac{x^2-25}{x^2-16} \bullet \frac{x+4}{2x^2+10x}$

15. $\frac{x^2-x-6}{x^2+2x} \bullet \frac{x^3+x^2}{x^2-2x-3}$

16. $\frac{x^2+2x-15}{x^2+3x+2} \div \frac{x+5}{x+1}$

17. $\frac{x^2-36}{2x^2-4x} \div \frac{x^2+8x+12}{x^2-4}$

18. $\frac{2x^2+3x+1}{x^2+2x-15} \div \frac{x^2+6x+5}{2x^2-7x+3}$

Perform the operation. Then simplify.

19. $\frac{1}{x+5}+\frac{2}{x-3}$

20. $\frac{3}{x+1}+\frac{5}{x-1}$

21. $\frac{1}{x-1}-\frac{1}{x+2}$

22. $\frac{x}{x-4}-\frac{3}{x+6}$

Rationalize the denominator.

23. $\frac{1}{2-\sqrt{3}}$

24. $\frac{2}{3-\sqrt{5}}$

25. $\frac{4}{1-\sqrt{2}}$

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Period: _____

Precal: 1.5 worksheet

Solve the equation.

1. $2x+7=31$

2. $\frac{1}{2}x-8=1$

3. $5x-13=12-5x$

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

Solve the equation by factoring.

5. $x^2+x-12=0$

6. $x^2+3x-4=0$

7. $4x^2-4x-15=0$

8. $2x^2+7x+3=0$

Solve by completing the square.

9. $x^2+2x-5=0$

10. $x^2-4x+2=0$

11. $x^2+10x-11=0$

12. $x^2+8x-4=0$

Solve using the quadratic formula.

13. $x^2-2x-15=0$

14. $2x^2+x-3=0$

15. $x^2+3x+1=0$

16. $3x^2+7x+4=0$

Find all real number solutions.

17. $\sqrt{x-3}=5$

18. $\sqrt{x+1}+2=0$

19. $2\sqrt{x+5}+1=13$

20. $|x+5|=7$

21. $|x-3|-4=10$

22. $2|x-1|+3=15$

Name: _____

Period: _____

Precal: 1.7 Worksheet

Solve the linear equality. Express the answer as an inequality, interval form and graph.

1. $2x - 5 > 3$

2. $3x + 11 < 5$

3. $7 - x \geq 5$

4. $3x + 11 \leq 6x + 8$

5. $6 - x \geq 2x + 9$

6. $2 \leq x + 5 < 4$

7. $5 \leq 3x - 4 \leq 14$

8. $-1 < 2x - 5 < 7$

9. $1 < 3x + 4 \leq 16$

Solve the nonlinear inequality. Express the answer as an inequality, interval form, and graph.

10. $(x + 2)(x - 3) < 0$

11. $(x - 5)(x + 4) \geq 0$

12. $x^2 - 3x - 18 \leq 0$

13. $x^2 + 5x + 6 > 0$

14. $2x^2 + x - 1 \geq 0$

15. $x^2 - x - 2 < 0$

Solve the absolute value inequality. Express the answer as an inequality, interval and graph.

16. $|x| \leq 4$

17. $|3x| < 15$

18. $|x - 5| \leq 3$

19. $|x + 1| \geq 1$

1.10 Exercises

1–8 ■ Find the slope of the line through P and Q.

1. $P(0, 0)$, $Q(4, 2)$
2. $P(0, 0)$, $Q(2, -6)$
3. $P(2, 2)$, $Q(-10, 0)$
4. $P(1, 2)$, $Q(3, 3)$
5. $P(2, 4)$, $Q(4, 3)$
6. $P(2, -5)$, $Q(-4, 3)$
7. $P(1, -3)$, $Q(-1, 6)$
8. $P(-1, -4)$, $Q(6, 0)$

15–34 ■ Find an equation of the line that satisfies the given conditions.

15. Through $(2, 3)$; slope 1
16. Through $(-2, 4)$; slope -1
17. Through $(1, 7)$; slope $\frac{2}{3}$
18. Through $(-3, -5)$; slope $-\frac{7}{2}$
19. Through $(2, 1)$ and $(1, 6)$
20. Through $(-1, -2)$ and $(4, 3)$
21. Slope 3; y-intercept -2
22. Slope $\frac{2}{5}$; y-intercept 4
23. x-intercept 1; y-intercept -3
24. x-intercept -8; y-intercept 6
25. Through $(4, 5)$; parallel to the x-axis
26. Through $(4, 5)$; parallel to the y-axis
27. Through $(1, -6)$; parallel to the line $x + 2y = 6$
28. y-intercept 6; parallel to the line $2x + 3y + 4 = 0$
29. Through $(-1, 2)$; parallel to the line $x = 5$
30. Through $(2, 6)$; perpendicular to the line $y = 1$
31. Through $(-1, -2)$; perpendicular to the line $2x + 5y + 8 = 0$
32. Through $(\frac{1}{2}, -\frac{2}{3})$; perpendicular to the line $4x - 8y = 1$
33. Through $(1, 7)$; parallel to the line passing through $(2, 5)$ and $(-2, 1)$
34. Through $(-2, -11)$; perpendicular to the line passing through $(1, 1)$ and $(5, -1)$
35. (a) Sketch the line with slope $\frac{3}{2}$ that passes through the point $(-2, 1)$.
    (b) Find an equation for this line.
36. (a) Sketch the line with slope -2 that passes through the point $(4, -1)$.
    (b) Find an equation for this line.

41–52 ■ Find the slope and y-intercept of the line and draw its graph.

41. $x + y = 3$
42. $3x - 2y = 12$
43. $x + 3y = 0$
44. $2x - 5y = 0$
45. $\frac{1}{2}x - \frac{1}{3}y + 1 = 0$
46. $-3x - 5y + 30 = 0$
47. $y = 4$
48. $4y + 8 = 0$
49. $3x - 4y = 12$
50. $x = -5$
51. $3x + 4y - 1 = 0$
52. $4x + 5y = 10$