

CHS Summer Pre-Calculus

Review Problem Set 1

Solve the following by factoring.

1.  $x^2 - 8x + 7 = 0$

2.  $x^2 + 9x + 18 = 0$

3.  $x^2 - 3x - 28 = 0$

4.  $x^2 + 5x + 4 = 0$

5.  $x^2 + 14x + 48 = 0$

6.  $5x^2 - 245 = 0$

7.  $2x^3 - 26x^2 + 72x = 0$

8.  $2x^2 - 17x - 9 = 0$

9.  $5x^2 + 46x - 40 = 0$

10.  $5x^2 + 3x - 14 = 0$

Solve the following equations for x

11.  $3x - 5 = 19$

12.  $\frac{2}{3}x - 7 = -15$

13.  $5xh - 4b = 11$

If  $f(x) = 3x^2 - 5x - 1$  and  $g(x) = \sqrt{5x + 9}$  evaluate the following.

14.  $f(3)$

15.  $f(-2)$

16.  $g(-1)$

17.  $g(15)$

18.  $f(g(8))$

19.  $g(f(3))$

20. If  $f(x) = x^2 - 5x$ , evaluate  $f(x + h)$ .

For the following, find the equations of the lines described.

21.  $m = \frac{5}{4}, (-4, -3)$

22.  $m = \frac{-3}{5}, (-5, -2)$

23. through  $(-2, 2)$  &  $(8, -18)$

24. through  $(1, -4)$  &  $(-4, -1)$

Simplify the following. For example,  $\frac{x^4 - 5x^2 + 6}{x} = x^3 - 5x + 6x^{-1}$

25.  $\frac{5x^3 - 2x^2 + 6x}{x}$

26.  $\frac{x^5 - 5x^3 + 4}{\sqrt{x}}$

27.  $\frac{x^2 - 4x + \sqrt{x}}{\sqrt[3]{x}}$

Simplify the following using laws of exponents.

$$28. \frac{a^{11}b^{14}}{(a^3b^{-2})^4}$$

$$29. a^4 \cdot \sqrt{a^6b^9}$$

$$30. \sqrt{(4x^2y^7)^6}$$

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Review Problem Set 2

Solve the following by factoring.

1.  $x^2 - 6x - 16 = 0$

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

5.  $x^2 - 7x - 8 = 0$

7.  $4x^2 + 12x = 0$

9.  $5x^2 + 49x - 10 = 0$

2.  $x^2 - 4x - 32 = 0$

4.  $x^2 - x - 20 = 0$

6.  $2x^3 - 18x^2 + 36x = 0$

8.  $5x^2 - 9x = 0$

10.  $7x^2 + 65x - 50 = 0$

Solve the following.

11.  $\frac{5}{3}x - 11 = -26$

12.  $\ln((x + 5)^2) = 16$

13.  $2^{x+4} = 8^{x-4}$

Expand the following.

14.  $(x + 5)^2$

15.  $(x + 2)^3$

16.  $(x + h)^2$

17. If  $f(x) = x^2 + 3x$ , evaluate  $f(4 + h) - f(4)$ .

For the following, find the equations of the lines described.

18.  $m = \frac{4}{3}, (-6, 7)$

19. Through  $(-6, 6)$  &  $(15, -8)$

20. through  $(4, 7)$  &  $(10, 22)$

21. perp to  $y = \frac{-3}{5}x + 2$ , through  $(12, 7)$

Simplify the following using log laws.

22.  $\ln\left(\frac{e^5 x^4}{y^6}\right)$

23.  $\log\left(\frac{100x}{y^4 z^9}\right)$

24. Write  $1000 + 4 \log x - 6 \log y - b \log z$  as a single log.

For the following, simplify the rational functions.

$$25. \frac{x^2 - 5x + 11}{x}$$

$$26. \frac{3x^3 - 4x + 5}{\sqrt{x}}$$

$$27. \frac{5x^2 - 6x - \frac{1}{x}}{\sqrt[3]{x}}$$

Simplify the following using laws of exponents.

$$29. (x^4 y^7)^2 (a^9 x^{-3})^{\frac{2}{3}}$$

$$30. \frac{x^4 y^7}{\sqrt{x^{16} y^{-4}}}$$

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Review Problem Set 3

Solve each equation by factoring.

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

2.  $4x^2 - 96x = 0$

3.  $x^2 - 16 = 0$

4.  $x^2 + x - 56 = 0$

5.  $x^2 + 7x = 0$

6.  $x^2 - 14x + 48 = 0$

7.  $4x^2 + 4x - 288$

8.  $4x^2 + 8n = 0$

9.  $5x^2 + 19x + 18 = 0$

10.  $7x^2 + 76x + 60 = 0$

Expand the following:

11.  $(x + 4)^2$

12.  $(x + 1)^4$

13.  $(x + h)^3$

14. If  $f(x) = 3x^2 - 5x$ , evaluate  $f(x + h)$

Solve the following equations. (no calc)

15.  $\frac{2x-11}{7} = 3$

16.  $\ln((x - 5)^3) = 27$

17.  $2^{3x+4} = 8^{2x-5}$

Simplify the following using properties of exponents.

18.  $(x^3y^4)^3 \cdot (4x^{-5}y^3)^{-2}$

19.  $\frac{(a^4b^{-3})^4}{a^{-4}b^5}$

20.  $\sqrt{\frac{a^7b^4}{(a^{-3}b^3)^{-2}}}$

Use log laws to expand the following.

21.  $\log(5x^3y^6)$

22.  $\ln\left(\frac{x^3y^6}{z^5}\right)$

23.  $\ln\sqrt{\frac{x^6y^4}{z^3e^8}}$

Use log laws to write the following as a single log

24.  $\log x + 5 \log y - 6 \log z$

25.  $8 + \ln x + 4 \ln y - 5 \ln(ab)$

Write the equations of the lines with the information below.

26.  $(4, 5)$  &  $(9, 7)$

27.  $(-9, 4)$  &  $(6, -16)$

28. Parallel to  $y = \frac{2}{5}x$  through  $(10, 2)$

For the following, identify at what values you find

a) *x* – intercepts b) *y* – intercepts c) holes d) vertical asymptotes and e) horizontal asymptotes

29. 
$$\frac{(x^2-2x-24)(x^2+2x-15)}{(x-3)(x^2+6x+8)}$$

30. 
$$\frac{(2x^2-3x-20)(x+3)}{(x^2-9x+20)(x+4)}$$

Simplify the following.

31. 
$$\frac{2x^2 - x^{\frac{2}{3}} - \frac{1}{x}}{\sqrt{x}}$$