Secondary 3 Math Name_____ ID: 1

Final Review

Date_____ Period____

Simplify each expression.

1) $(4n^3 + 7n^4 - 2) - (4n^2 + 4n^3 + 6n) + (8n + 3 + 4n^2)$

2) $(7r^4 + 6r^3 + 8r^2) + (4r^4 - 7r^3 + 3r^2) - (6r^4 + 5r^2 + 3r^3)$

Find each product.

3) $(5a - 8)(a^2 + a + 5)$

4) $(b - 3)(6b^2 + 8b - 4)$

5) $(2n^2 - 4n - 6)(n^2 - 5n - 4)$

6) $(5r^2 + 5r - 6)(5r^2 - 4r - 7)$

Divide.

7) $(a^3 + a^2 - 58a + 4) \div (a - 7)$

8) $(k^3 + 14k^2 + 44k + 18) \div (k + 4)$

Solve each equation. Remember to check for extraneous solutions.

9) $\frac{1}{n-6} + \frac{1}{n^2 - n - 30} = \frac{8}{n^2 - n - 30}$

10) $\frac{r-3}{r^2 - 3r - 28} = \frac{1}{r+4} + \frac{5}{r-7}$

11) $12 = 2 + \sqrt{\frac{x}{6}}$

12) $\sqrt{38 - 2r} = \sqrt{r - 7}$

Solve each equation.

13) $\log_4 4x + \log_4 2 = 1$

14) $\log_3 (x - 10) - \log_3 7 = 3$

Solve each equation. Round your answers to the nearest ten-thousandth.

15) $5^{x-8} - 3 = 66$

16) $3 \cdot 6^{-2m} = 64$

Find the inverse of each function.

17) $f(x) = \frac{2}{x} - 1$

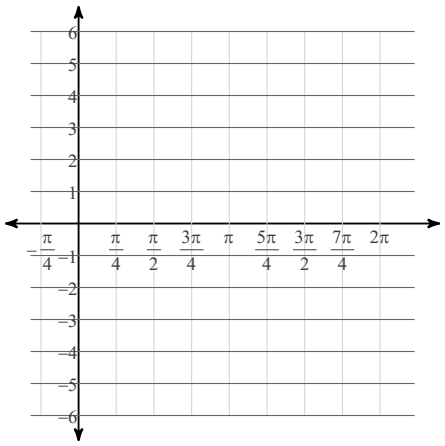
18) $g(x) = -\frac{1}{x-1} - 2$

19) $y = \ln x + 8$

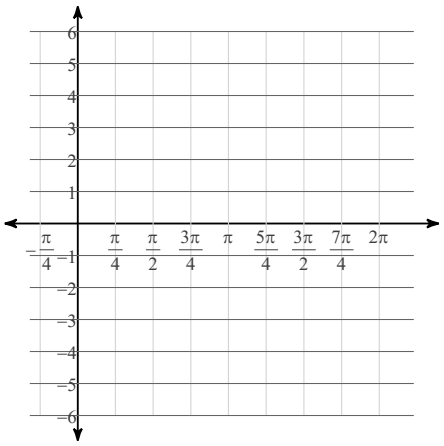
20) $y = \log_4(-2x)$

Graph each function using radians.

21) $y = 2\cos 2\theta + 2$

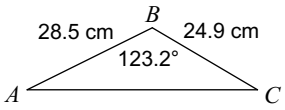


22) $y = 2\cos 4\theta - 2$



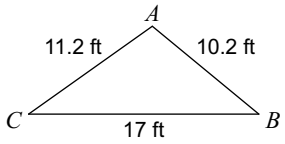
Find each measurement indicated. Round your answers to the nearest tenth.

23) Find AC



Solve each triangle. Round your answers to the nearest tenth.

24)



Solve each equation for $0 \le \theta < 360$. Round your answers to the nearest hundredth.

25) $-4 - 3\sin\theta = -4.57$

26) $2 + \frac{1}{4} \cdot \cos\theta = 1.99$

Evaluate each series.

27) $\sum_{k=1}^{5} k(k-1)$

28) $\sum_{a=1}^{7} (4a^2 + 2)$

Rewrite each series using sigma notation.

29) $8 + 4 + \frac{8}{3} + 2 + \frac{8}{5} + \frac{4}{3}$

30) $\frac{5}{6} + \frac{6}{7} + \frac{7}{8} + \frac{8}{9} + \frac{9}{10}$

31) What is the average rate of change on the function $f(x) = x^3 - 2x^2$ on the interval $[-1 \quad 5]$

32) What is the average rate of change on the function $f(x) = 2^x - 4$ on the interval $[2 \quad 8]$

33) Solve the system of equations
$y = x^2 - 5x + 6$
$y = \log_4 x - 5$

34) Solve the system of equations
$y = 2^{x-1} - 3$
$y = -3x^2 - 4x + 7$

35) A surveyor needs to determine the distance between two points that lie on opposite banks of a river. Two points, A and C, along one bank are 200 yards apart. The point B is on the opposite bank. Angle A is 75° and angle C is 60°. Find the distance between A and B to the nearest tenth of a yard.

36) A surveyor needs to determine the distance between two points that lie on opposite banks of a river. Two points, A and C, along one bank are 250 yards apart. The point B is on the opposite bank. Angle A is 70° and angle C is 50°. Find the distance between A and B to the nearest tenth of a yard.

37) ACT test scores are approximately normally distributed. One year the scores had a mean of 21 and a standard deviation of 5.2.
a.What is the interval that contains 95% of scores?

b.What percentage of ACT scores is between 28 and 36?

38) The average height of a NBA basketball player is 79 inches with a standard deviation of 3.89 inches.
a.What is the interval that contains 95% of the heights?

b.If John Stockton was 72 inches tall when he played in the NBA, what percentage of players are shorter than he was?

39) A consumer research group tested battery life of 28 randomly chosen cell phones to establish the likely battery life for the population of the same type of cell phone. Recorded battery life is given by the following values.

55.4	63.3	72.7	70.6
50.2	85.4	85.2	83.2
72	69.5	65.4	65.1
55.7	73.1	47.9	72.9
58.5	81.1	58.5	55.3
58.9	75.4	73.9	80
61.3	69.8	75.4	58.9

a.Find the mean and standard deviation for the sample. (Round to the nearest tenth)
b.Approximate the margin of error for a 95% confidence level and round to the nearest tenth.
c.Find the 95% confidence interval.
d.Interpret the meaning of the interval in terms of battery life for this type of cell phone.

40) A study of 200 Utah families found that the average number children is 2.1, with a standard deviation of 1.1.

a) Find the margin of error for a 95% confidence level

b) Find the 95% confidence interval for the population proportion

c) Interpret the confidence interval's meaning in the context of this problem

41) The Great Wheel in Seattle is the largest observation wheel on the west coast, standing 175 feet tall. Suppose you enter the bottom of the wheel at ground level and the wheel rotates once every 16 minutes. What will your height be after riding on the wheel for 7 minutes?

42) The Great Wheel in Seattle is the largest observation/Ferris wheel on the west coast, standing 140 feet tall. Suppose you enter the bottom of the wheel at ground level and the wheel rotates once every 18 minutes. What will your height be after riding on the wheel for 5 minutes?