Name_____ ID: 1
3rd Quarter Final Review
Date_____ Period_____

Simplify each expression.

1) $\left(-x^4 - 2 - 4x\right) + \left(-4x^3 - 1 - 4x\right)$

2) $\left(5 + 5k + 4k^4\right) + \left(-6k^4 + 3 + 5k\right)$

3) $\left(-2 + 6n^3 + 4n\right) - \left(-7n - 2 - 5n^3\right)$

4) $\left(6 - 4n - 3n^4\right) - \left(-4n - 8n^4 - 7\right)$

Find each product.

5) $\left(4m^2 + 6m + 3\right)\left(5m + 4\right)$

6) $\left(x^2 + x - 8\right)\left(5x + 3\right)$

State the number of complex zeros for each function.

7) $f(x) = x^4 + 8x^2 - 9$

8) $f(x) = x^6 - 124x^3 - 125$

Divide.

9) $\left(n^3 - 4n^2 - 68n - 54\right) \div \left(n + 6\right)$

10) $\left(a^3 - 6a^2 - 47a + 68\right) \div \left(a - 10\right)$

Solve each equation. Remember to check for extraneous solutions.

11) $\dfrac{3}{m} = \dfrac{3}{2m} + 1$

12) $\dfrac{7a - 21}{a^2 - 5a} - \dfrac{a - 2}{a^2 - 5a} = \dfrac{5}{a - 5}$

13) $-9 + \sqrt{7v} = -2$

14) $\sqrt{r + 4} - 3 = 3$

Solve each equation.

15) $5\log_3 (b + 2) = -5$

16) $-7 + \log_8 (x + 8) = -7$

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

17) $7^n - 9 = 39$

18) $-4 \cdot 16^m = -21$

Find the inverse of each function.

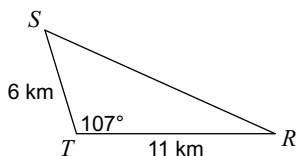19) $y = 5^x + 8$

20) $y = -\dfrac{4^x}{2}$

Solve each equation for $0 \le \theta < 2\pi$. Round your answers to the nearest hundredth.
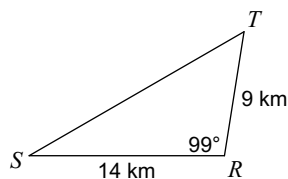
21) $4\sin \theta = -2\sqrt{2}$

22) $-0.82 = -\cos \theta$

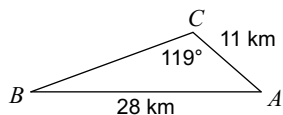**Find the AREA of each triangle to the nearest tenth.**
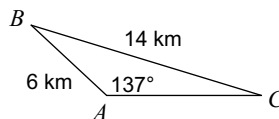
23)

24)

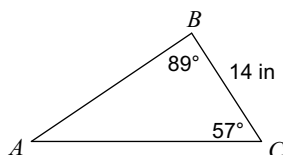**Find each measurement indicated. Round your answers to the nearest tenth.**
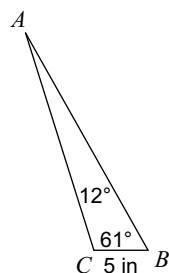
25) Find $m\angle B$
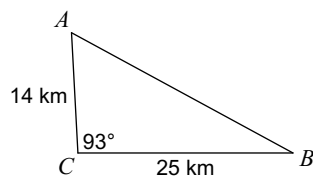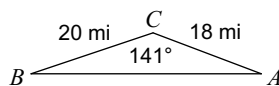

26) Find $m\angle C$



27) Find AB

28) Find AC

29) Find AB

30) Find AB

31) Points A and B are on opposite sides of the Grand Canyon. Point C is 500 yards from A. The angle at A is 84° and the angle at C is 20°. What is the distance from A to B?

32) A pipe is neede to be place between two points. Unfortunately, there is a hill between the points which makes measuring the distance impossible. You have chosen a point where you can see both point and make some measurments. You notice that from your point to the first location is 105 ft and to the second location is 355 ft. The measure angle between the two point from where you are standing is 120°. How many feet on piping should you buy?

Using radians, find the amplitude and period of each function. Then graph.

33) $y = \dfrac{1}{2} \cdot \sin \theta + 2$
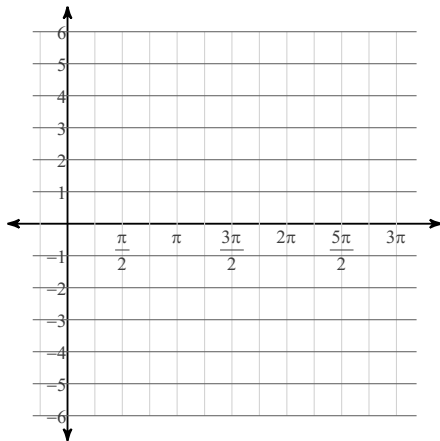
34) $y = 4\cos 4\theta - 2$
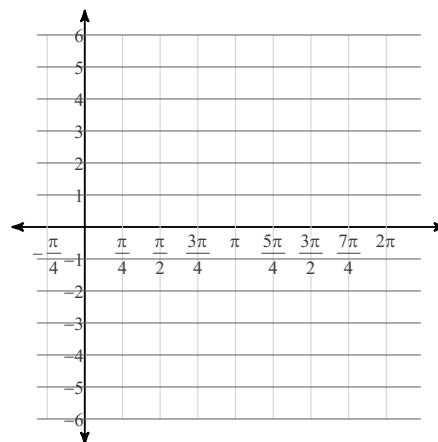
35) In Juneau, Alaska the average monthly low temperature is the lowest in January and the highest in July. It ranges from 24° F to 50° F. Write a cosine function that models the change temperature according to the month of the year.