

Session 3 Answers

- 1) 2 2) 4 3) 2 4) 1 5) 2 6) 4 7) 2 8) 3 9) 2 10) 3 11) 4 12) 4 13) 1
 14) 4 15) 2 16) 3 17) 4 18) 1 19) 3 20) 3 21) 2

22) $10 \text{ rad} \cdot \frac{180^\circ}{\pi \text{ rad}} \approx 572.96^\circ$

$572.96^\circ - 360^\circ = 212.96^\circ$

Quadrant III

23)

(a) The radius of the circle

$$28^2 + 45^2 = r^2 \Rightarrow r^2 = 2809 \Rightarrow r = \sqrt{2809} = 53$$

(b) $\sin \theta = \frac{45}{53}$

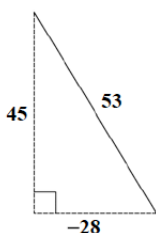
(c) $\cos \theta = \frac{-28}{53}$

(d) $\tan \theta = \frac{45}{-28} = -\frac{45}{28}$

(e) $\sec \theta = \frac{1}{\cos \theta} = -\frac{53}{28}$

(f) $\csc \theta = \frac{1}{\sin \theta} = \frac{53}{45}$

(g) $\cot \theta = \frac{1}{\tan \theta} = -\frac{28}{45}$



24) The angle is in Quadrant II because sine is positive and cosine is negative. This means the tangent of the angle is negative.

$$\sin A = \frac{\text{opp}}{\text{hyp}} = \frac{3}{4} \quad x^2 + 3^2 = 4^2 \quad x^2 = 7$$

$$x = \sqrt{7}$$

$$\tan A = \frac{\text{opp}}{\text{adj}} = -\frac{3}{\sqrt{7}}$$

25) $f_{\min} = 8 - 6 = 2$

$$f_{\max} = 8 + 6 = 14$$

Range of $f(x)$: $[2, 14]$

Since the range of this function does not contain 0, the function will never have an output of 0. Therefore, the equation does not have any solutions.

26) $\text{per} = \frac{2\pi}{B} = \frac{2\pi}{\frac{\pi}{5}} = 10$

The period is the distance it takes to complete a full cycle of the function. $3 + 10 = 13$.

So $f(3) = f(13)$.

27) a) $52 + 45 = 97$ feet

b) $\text{period} = \frac{2\pi}{\frac{\pi}{7}} = 14$. The period is 14 minutes. Since the person got on the ride at the lowest

point, it only takes half the cycle to reach the maximum height. Therefore it will take 7 minutes for the person to reach the maximum height for the first time.

29b) The graph is $\frac{\pi}{3}$ units to the right of the one in part a.

30) 1 31) 3 32) 2 33) 1 34) 1 35) a) odd b) odd – symmetric with respect to the origin
 even – symmetric with respect to the y-axis

36) 3 37) 1 38) 4 39) 3 40) 2 41) 1 42) 2 43) 4 44) 3

45) a) $\frac{5}{9}$ b) $\frac{2}{5}$ c) $\frac{7}{9}$

46) a) $\frac{538}{947} \approx 57\%$ c) $P(10th | April) = \frac{160}{538} \approx 30\%$

b) $\frac{117+132}{947} \approx 26\%$ d) $P(April | 9th) \neq P(April)$ $\frac{166}{230} \neq \frac{538}{947}$ so they are not independent.

47) $P(P \text{ or } H) = P(P) + P(H) - P(P \text{ and } H)$
 $= 0.85 + 0.68 - 0.61 = 0.92$

Since 92% of the students liked either pizza or hot dogs, 8% must have liked neither for a total of:

$.08 \times 500 = 40$ total students

48) (8,5,-2) 49) (2,5,-7) $y = 2x^2 + 5x - 7$ 50) 3 51) 2 52) 4 53) 3 54) 3 55) 4

56)

If drivers are stopped on their way home from work, many of them will likely be annoyed or angry about it. Therefore, it will inject bias into the survey because they will not be able to give an unemotional response to their attitude about their evening commute.

57) Using the calculator with frequencies:

$\bar{x} - s_x = 2.3 - 1.4 = 0.9$

$\bar{x} = 2.254... = 2.3$, median = 2

$\bar{x} + s_x = 2.3 + 1.4 = 3.7$

$s_x = 1.363... = 1.4$

1 to 3 children: $16 + 24 + 8 = 48$

58)

normalcdf(90, 100, 82, 5) = 0.0546 \approx 5.5%

Jeremy's z-score = $\frac{90 - 82}{5} = 1.6$ standard deviations above the mean

Lisa's Score = $83 + 1.6(6.4) = 93.24 = 93$

59) **Calculator: $\bar{x} = 24.03$ and $s_x = 5.39$**

$$\bar{x} - s_x = 18.64$$

Total of 250 cars

$$\bar{x} + s_x = 29.41$$

All mpg between 19 and 29:

$$\frac{185}{250} = 0.74 = 74\%$$

$$35 + 68 + 52 + 30 = 185$$

This is close to being well modeled, but is a little off. If the distribution was normal, then 68% of the data would fall within one standard deviation of the mean, whereas here it was 74%.

60) **On calculator: $x = 48$**

$$y = 47.97(0.94)^x \quad y = 47.97(0.94)^{48} = 2.46... = 2.5 \text{ feet}$$