

Team:

Show all work.

Seat #:

Name:

PreCalculus Team Quiz 5

1. Solve $9^{4x-3} = 27^{5x}$.

$x = -6/7$

2. Solve $\log_{18} 8 = e^{\ln(x-3)}$.

$x \approx 3.72$

3. Solve $\log_2 10x + 2 \log_2 6x - \log_2 20x^2 = 5$.

$x = 16/9$

4. Given $f(x) = 3^x$, sketch $f(x)$ and $f^{-1}(x)$. Label each graph with its equation.

5. If the population of Murry City is increasing at an annual rate of 4.1%, how long will it take for it to double?
17 years, 3 months

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PreCalculus Team Quiz 6

Explain why the work provided is incorrect. Then do the problem correctly.

1. In how many ways can Alex choose three courses from a catalog of 20 courses?

20 • 19 • 18

2. Caleb pulls two cards out of a deck. What is the probability that the second card is a king?

$\frac{4}{51}$

3. Ryan and Tyler each pull a card out of a deck. What is the probability that their cards are the same suit?

$\frac{13}{52} \cdot \frac{12}{51}$

4. A deck has 10 blue cards, 6 orange cards, 3 red cards, and a black card. What is the probability that three random cards will not all be the same color?

$1 - ((\frac{10}{20} \cdot \frac{10}{20} \cdot \frac{10}{20}) + (\frac{6}{20} \cdot \frac{6}{20} \cdot \frac{6}{20}) + (\frac{3}{20} \cdot \frac{3}{20} \cdot \frac{3}{20}))$

5. A playlist has 5 Pink songs and 3 Rihanna songs. When played in random order, what is the probability that one of the first two songs is by Pink and the other is by Rihanna?

$\frac{5}{8} \cdot \frac{3}{7}$

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PreCalculus Team Quiz 7

Explain each answer with one or more complete sentences.

1. Estimate the correlation coefficient for hours of sleep per week versus cups of coffee drunk per week.

2. Use a line of best fit for the data set below to predict the score on the fall PreCalculus final (y) for someone with a semester homework percentage (x) of 75. (The names have been changed.) 172

Student	x	y
Alvin	90	200
Bradley	93	186
Caroline	86	159
Douglas	89	217
Elizabeth	68	166
Fernando	91	176

3. There is a positive correlation between math skills and History grades. Explain two or more confounds that could explain why this finding does not necessarily mean that math skills improve History grades.

4. State how many of the bold words in the following sentence are spelled incorrectly: "Weather **effects** driving safety, and road conditions also have an **effect**, but the biggest factor **effecting** driving safety may be the **effectiveness** of the driver." two

5. The data below are the percentage of people who are religious (x) and the number of people treated for methamphetamine use per 100,000 people in 2003 (y) in five random states. Explain what is wrong with each of the three bold words in the conclusion "We **proved** that religion does **not affect** methamphetamine use." Then rewrite the conclusion appropriately. **We conclude that religion correlates with methamphetamine use.**

State	x	y
Texas	78	13
Vermont	43	3
Michigan	66	6
New York	61	4
Mississippi	89	19

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PreCalculus Team Quiz 8

Show all work.

1. Give a unit vector orthogonal to $-3\mathbf{i} + 4\mathbf{j}$.

$$\frac{4}{5}\mathbf{i} + \frac{3}{5}\mathbf{j}$$

2. Find the angle between the vectors $4\mathbf{i} + 10\mathbf{j}$ and $7\mathbf{i} + 6\mathbf{j} - \mathbf{k}$.

$$28.2^\circ$$

3. Is the point $(9, 4, -1)$ on the line $\mathbf{r} = \langle 5, 2, 1 \rangle + t\langle 1, -2, 4 \rangle$?

no

4. Given vectors \mathbf{u} and \mathbf{v} below, use a ruler and a protractor to sketch $2\mathbf{u} - \mathbf{v}$ to scale.



5. Let \mathbf{a} be $\langle 10, -8 \rangle$, let \mathbf{b} be $-\mathbf{i} + 5\mathbf{k}$, and let \mathbf{c} be parallel to \mathbf{a} but half as long and in the opposite direction. Find $2\mathbf{a} - 4\mathbf{b} + 3\mathbf{c}$.

$$\langle 9, -4, -20 \rangle$$

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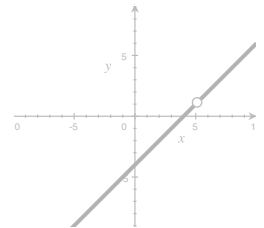
PreCalculus Team Quiz 9

Show all work. Where there is no work to show, use complete sentences to explain how to get the answer.

1. Given $f(x) = x^4$, simplify $\frac{f(x+h) - f(x)}{h}$.

$$4x^3 + 6x^2h + 4xh^2 + h^3$$

2. Sketch $f(x) = \frac{x^2 - 9x + 20}{x - 5}$, and find $f(5)$ and $\lim_{x \rightarrow 5} \frac{x^2 - 9x + 20}{x - 5}$.



undefined
1

3. Calculate the infinite sum $2662 + 726 + 198 + 54 + \dots$, if a sum exists.

$$3660.25$$

4. Find the equation of the line tangent to $f(x) = 2x^3 - 10x + 1$ when $x = 2$.

$$y = 14x - 31$$

5. Given $d(x)$ represents the temperature, in degrees Celsius, of an engine after it has run for t seconds, state the difference between $d(60)$ and $d'(60)$. Be sure to use correct units.