

Sample Assessment Questions for MATH 425

University of New Hampshire

1. Find $g(1)$ if $g(t) = \frac{t^2-4}{2-t}$.

A. $\frac{9}{2}$ B. -1 C. 1 D. -3 E. 3

2. Which are factors of $x^3 - 1$?

A. $x + 1$ B. $x - 1$ C. $x^2 + x + 1$ D. $x^2 - 2x + 1$ E. *A and C* F. *B and C* G. *B and D*

3. $\frac{x}{3y} + \frac{2x}{y}$

A. $\frac{7x}{3y^2}$ B. $\frac{7x}{3y}$ C. $\frac{3x}{4y}$ D. $\frac{7x}{y}$ E. $\frac{5x}{3y}$

4. Solve the following system of equations: $\begin{cases} x - y = 1 \\ 2x + y = 0 \end{cases}$

A. $x = -\frac{1}{3}, y = -\frac{2}{3}$ B. $x = -\frac{1}{3}, y = \frac{2}{3}$ C. $x = \frac{1}{3}, y = \frac{2}{3}$ D. $x = \frac{1}{3}, y = -\frac{2}{3}$ E. *None of these*

5. Let $g(x) = mx^2 + x + 1$. Find m if $g(1) = \frac{8}{3}$.

A. $m = \frac{6}{3}$ B. $m = \frac{4}{3}$ C. $m = \frac{2}{3}$ D. $m = \pm \sqrt{\frac{2}{3}}$ E. *Cannot solve for m*

6. Find the fifth root of $\frac{32x^{10}y^2}{z^5}$.

A. $2x^2yz^{-1}$ B. $\frac{4x^2}{z}y^{1/5}$ C. $\frac{4x^2y^{2/5}}{z}$ D. $\frac{2x^2}{z}y^{2/5}$ E. None of these

7. Rewrite $(25)^{1/2}(16)^{3/2}$.

A. 320 B. $\frac{25}{2} \cdot \frac{16}{2}$ C. 40 D. $\left(\frac{1}{5}\right)\left(\frac{1}{4}\right)^3$ E. $(25 \cdot 16)^{3/4}$

8. Simplify $\frac{s^2+3s+2}{s+1} \cdot \frac{2+2s}{2s+4}$ where $s \neq -1$ and $s \neq -2$.

A. $2(s+1)$ B. $\frac{s^2+3s+2}{2(s+2)}$ C. $\frac{s+1}{2s+4}$ D. $s+1$ E. None of these

9. $x^2 < 9$ is equivalent to which of the following?

A. $x < 3$ B. $x < -3$ C. $-3 < x < 3$ D. $-3 > x > 3$ E. $x > -3$

10. $|3 - x| > 1$ is equivalent to which of the following?

A. $x < 2$ B. Either $x < 2$ or $x > 4$ C. $x = 0$ D. $2 < x < 4$ E. $x > 4$

11. Given $y(t) = 3e^{5t}$, find the value of t such that $y(t) = 6$.

A. $5\ln 2$ B. $\frac{\ln(\frac{1}{2})}{5}$ C. $\frac{1}{5}e^2$ D. $\frac{\ln 2}{5}$ E. None of these

12. Find x such that $\log_{10} x = \frac{1}{2}$.

A. $x = 10$ B. $x = 100$ C. $x = \sqrt{10}$ D. $x = 1$ E. $x = 0$

13. Given that $x \neq 0$, simplify $x^{-1} + \frac{1}{x^2}$.

A. $\frac{x^2 + 1}{x^2}$ B. x^{-3} C. $\frac{x + 1}{x^2}$ D. $\frac{x + 1}{x}$ E. None of these

14. Find $f(x + h)$ given that $f(x) = x + x^2$.

A. $x^2 + x + 2xh + h + h^2$ B. $x + x^2 + h$ C. $x + x^2 + h + h^2$
D. $x^2 + x + xh + h + h^2$ E. None of these

15. Rewrite $\log\left(\frac{xy}{z^2}\right)$ given that x, y , and z are positive numbers.

A. $(\log x)(\log y) - \log(z^2)$ B. $\frac{(\log x)(\log y)}{\log(z^2)}$ C. $\log x + \log y + 2\log z$
D. $\log x + \log y - 2\log z$ E. None of these

16. $2 - 4x < 2x + 3$

A. $x < -\frac{1}{6}$ B. $x > -\frac{1}{6}$ C. $x < -\frac{1}{2}$ D. $x > -\frac{1}{2}$ E. $x > -\frac{5}{6}$

17. Find an equivalent expression for $\sin^2 x$.

A. $\cos^2 x$ B. $\sin 2x$ C. $(\cos^2 x) + 1$ D. $1 - \cos^2 x$ E. $\cos 2x$

18. Suppose $\sin \theta = \frac{1}{2}$ and θ is in the second quadrant. Find $\cos \theta$.

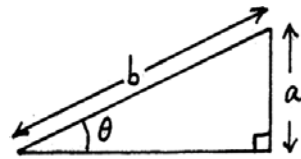
- A. $-\frac{\sqrt{3}}{2}$ B. $-\frac{\sqrt{3}}{4}$ C. $\frac{\sqrt{3}}{2}$ D. $-\frac{3}{4}$ E. $-\frac{1}{2}$

19. What is the period of $y = 4 \cos 3x$?

- A. 2π B. $\frac{2\pi}{3}$ C. 6π D. $\frac{\pi}{3}$ E. 4

20. In the triangle shown, $b = 3$ and $\sin \theta = 0.2$. What is a ?

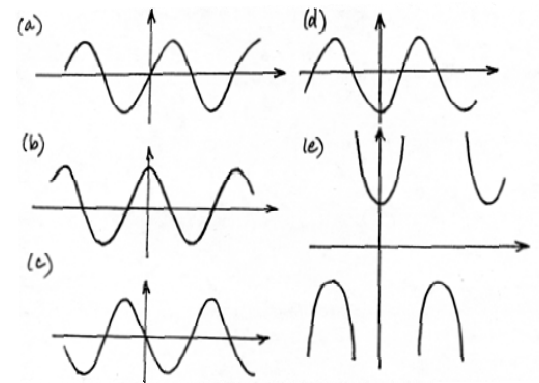
- A. $\frac{0.2}{3}$ B. $(0.2)(3)$ C. $\cos \theta$ D. $\sin \theta$ E. $(-0.2)(3)$



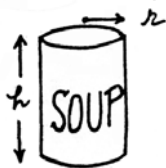
21. If $\tan \theta > 0$, which of the following statements is true?

- A. $\sin \theta > 0$ B. $\cos \theta < 0$ C. $\theta < \pi$
 D. θ is in the first or third quadrant E. θ is in the second or fourth quadrant

22. Which of the sketches could be the graph of $y = \cos \theta$?

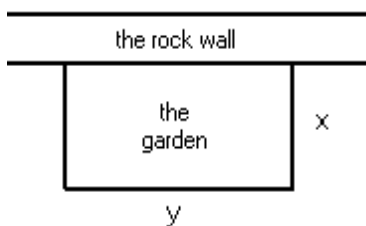


23. A can of tomato soup has radius r and height h . Write an expression for the area of its paper label.



- A. πr^2 B. $\pi r h$ C. $2\pi r h$ D. $r h$ E. $\pi r^2 h$

24. A rectangular garden patch of 100 square feet will be dug along a rock wall. The remaining three sides will need to be fenced in. Write a formula for f , the amount of fencing needed.



- A. $f = 2x + 2y$ B. $f = 2x + \frac{100}{x}$ C. $f = xy$ D. $f = 100 - xy$ E. $f = 2x + \frac{100}{2x}$

Solutions

- | | |
|-------|-------|
| 1. D | 13. C |
| 2. F | 14. A |
| 3. B | 15. D |
| 4. D | 16. B |
| 5. C | 17. D |
| 6. D | 18. A |
| 7. A | 19. B |
| 8. D | 20. B |
| 9. C | 21. D |
| 10. B | 22. B |
| 11. D | 23. C |
| 12. C | 24. B |