

Sample Assessment Questions for MATH 424B

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:
$$\begin{aligned} x - y &= 1 \\ 2x + y &= 0 \end{aligned}$$

- 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. Simplify $\frac{2x^2+x-3}{x-1}$ given that $x \neq 1$.

A. $2x + 3$ B. $-2x^2 + 3$ C. $2x - 3$ D. $-2x + 3$ E. *None of these*

7. Find the equation of the line containing points $(2, -3)$ and $(1, 7)$.

A. $y = -10x + 17$ B. $y = -10x + 23$ C. $y = 10x - 23$ D. $y = -\frac{1}{10}x - \frac{14}{5}$ E. *None of these*

8. 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*

9. 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. $(25 \cdot 16)^{3/4}$

10. Given $3x + 2xy - 4z = 3y + 7z$, solve for x .

A. $x = y + 11z - 3$ B. $x = \frac{11z + 3}{5}$ C. $x = \frac{3y + 11z}{2y + 3}$ D. $x = \frac{11}{2}z$ E. *None of these*

11. 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*

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

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

13. $|3 - x| > 1$ is equivalent to which of the following?

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

14. 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

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

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

16. 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

17. 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

18. 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

19. $x^2 + 5x - 6 > 0$

A. $x < -6$ or $x > 1$ B. $-6 < x < 1$ C. $x < 6$ and $x > 1$ D. True for all x E. None of these

20. $\frac{5}{x-2} + \frac{1}{x} + \frac{2}{x^2-2x} =$

A. $\frac{6}{x-2}$ B. $\frac{3}{x}$ C. $\frac{8}{x^2-2}$ D. $\frac{3}{x-1}$ E. None of these

21. $2 - 4x < 2x + 3$

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

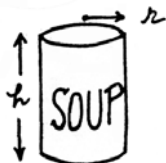
22. If $a = 5, b = 2,$ and $c = -2,$ find $a(bc^{-1})$.

A. $-\frac{5}{4}$ B. -5 C. 20 D. 5 E. None of these

23. What is $|x - 7|$ given that $x \leq 7$?

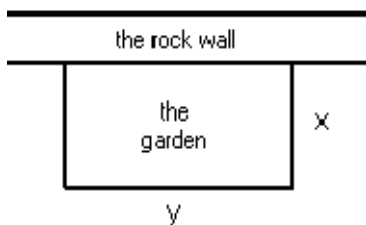
A. Positive B. Negative C. $x - 7$ D. $7 - x$ E. None of these

24. 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. $\pi r^2 h$

25. 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 | 14. D |
| 2. F | 15. C |
| 3. B | 16. C |
| 4. D | 17. A |
| 5. C | 18. D |
| 6. A | 19. A |
| 7. A | 20. A |
| 8. D | 21. B |
| 9. A | 22. B |
| 10. C | 23. D |
| 11. D | 24. C |
| 12. C | 25. B |
| 13. B | |