Print

# SAMPLE MATH 2312 TEST

**This is a one hour multiple choice test. There are 30 questions, and you must have a minimum of 20 correct answers to receive credit for this exam. There is no penalty for wrong answers.**

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1. $\cos 30^\circ \sin 45^\circ - \tan 60^\circ \sin 90^\circ =$

   (a) $\frac{1-\sqrt{3}}{2}$ (b) $\frac{\sqrt{2}}{4} - \sqrt{3}$ (c) $\frac{\sqrt{6}}{4} - \sqrt{3}$ (d) $\frac{\sqrt{2}-2\sqrt{3}}{4}$ (e) $\frac{\sqrt{3}}{\sqrt{2}} - \frac{1}{\sqrt{3}}$

2. If $\tan\theta = -\frac{3}{4}$ and $\theta$ is in Quadrant IV, then $\sin\theta =$

   (a) $-\frac{4}{5}$ (b) $-\frac{3}{5}$ (c) $\frac{3}{5}$ (d) $\frac{4}{5}$ (e) $-\frac{3}{4}$

3. $\sin\left(\cos^{-1}\left(-\frac{4}{5}\right)\right)$

   (a) $-\frac{4}{5}$ (b) $-\frac{3}{5}$ (c) $\frac{3}{5}$ (d) $\frac{4}{5}$ (e) $\frac{5}{3}$

4. $\frac{1}{2}\sin(4\theta)$

   (a) $\sin(2\theta)\cos(2\theta)$ (b) $2\sin\theta$ (c) $\pm\sqrt{\frac{1-\cos(2\theta)}{2}}$ (d) $2\sin\theta\cos\theta$ (e) $\sin(2\theta)$

5. A circle with center (-1, 3) contains the point (3, 5). The radius of this circle is

   (a) $-2\sqrt{5}$ (b) $2\sqrt{5}$ (c) 20 (d) $2\sqrt{2}$ (e) $4\sqrt{5}$

6. The equation of the line passing through the point (4, -3) and having slope –2 is

   (a) $2x + y = -5$ (b) $2x + y = 5$ (c) $x + 2y = -2$ (d) $x + 2y = 10$ (e) $2x - y = -5$

7. If $f(x) = \frac{x+3}{-2}$ and $g(x) = x^3 - 2$, then $f(g(-1)) =$

   (a) –3 (b) -1 (c) 0 (d) 1 (e) 3

8. The slope of a straight line perpendicular to the straight line which passes through the points (1, 2) and (3, -2) is

   (a) –2 (b) $-\frac{1}{2}$ (c) 0 (d) $\frac{1}{2}$ (e) 2

9. Let $f(x) = \frac{x^2+1}{(x+2)(x-3)}$. How many vertical asymptotes does the graph of f have

   (a) 0 (b) 1 (c) 2 (d) 3 (e) 6

10. If $f(x) = x^2 + 4$ and $g(x) = \sqrt{x}$, then $g(f(x)) =$

    (a) $\sqrt{x^2+4}$ (b) $x + 4$ (c) $\sqrt{x+2}$ (d) $x + 2$ (e) $|x + 2|$

**11.** **A function f is defined by f (x) = x – 2. Which one of the following points is on the graph of the inverse *f*?**

**(a) (-3, -1)** **(b) (–1, 3)** **(c) (1, -3)** **(d) (1, -1)** **(e) (3, 1)**

**12.** **The graph of the parabola $x = -y^2 + 2y - 3$**

**(a) opens upward** **(b) opens downward** **(c) opens to the right**

**(d) opens to the left** **(e) has one of the coordinate axis as its line of symmetry**

**13.** **Which one of the following is true for the graph of $y = e^x$?**

**(a) It crosses the x-axis exactly once.**

**(b) It is asymptotic to the negative y-axis.**

**(c) It rises as x decreases.**

**(d) It intersects the y-axis at (0, e).**

**(e) It crosses every line y = c exactly once where c is any positive constant.**

**14.** **Which one of the following polynomial is not n factor of $x^4 + x^3 – x – 17$**

**(a) $x^2 + x + 1$** **(b) $x^2 + 1$** **(c) $x^2 – 1$** **(d) $x + 1$** **(e) $x –1$**

**15.** **Let $f(x) = \sqrt{3 - x} + \log_{10} x$. The domain of *f* consists of all real numbers x such that**

**(a) $x \le 3$** **(b) $0 \le x \le 3$** **(c) $0 < x \le 3$** **(d) $0 < x$** **(e) $3 \le x$**

**16. Solve the following inequality:**

**(a)** $\frac{2-k}{3} \le x \le \frac{2+k}{3}$ **(b)** $\frac{2-k}{3} < x < \frac{2+k}{3}$ **(c)** $\frac{2+k}{3} \le x \le \frac{2-k}{3}$ **(d)** $\frac{2+k}{3} < x < \frac{2-k}{3}$

**(e) None of these.**

**17. Express as single fraction in lowest terms without zero or negative exponents:**

$$\frac{3^2 y^3 x^{-2}}{t^{-2} y} \qquad \frac{t^3 y}{y^{-4} x^3 y}$$

**(a) $9y^2t^2/x^2$** **(b) $x^2/9y^2t^2$** **(c) $ty^2/9x$**

**(d) $9x/ty^2$** **(e) None of these.**

**18. Solve for x: $3^x = 2^{(x+1)}$**

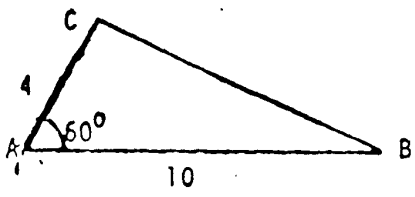
**(a) x = log(2) – log(1.5)** **(b) x = ln(2) – ln(1.5)** **(c) x = ln(2) / ln(6)**

**(d) x = log(2)/log(1.5)** **(e) None of these**

**19. The area of ABC is: (See sketch)**

**(a)** $5\sqrt{3}$ **(b)** $20\sqrt{3}$ **(c) 10** **(d) 20**

**(e) None of these.**

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**ANSWERS:**

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|---|---|---|---|---|---|---|---|---|---|
| 1. c | 2. b | 3. c | 4. a | 5. b | 6. b | 7. c | 8. d | 9. c | 10. a |
| 11. a | 12. d | 13. e | 14. b | 15. c | 16. a | 17. d | 18. d | 19. e | |