

ASSESSMENT TEST D

DO NOT WRITE ON THIS SHEET. CALCULATORS ARE NOT ALLOWED.

You must have at least 15 out of 25 questions correct to pass. You have 50 minutes.

1. $\frac{1}{6} + \frac{3}{10} =$

- (a) $\frac{1}{4}$ (b) $\frac{1}{15}$ (c) $\frac{7}{15}$ (d) $\frac{2}{9}$ (e) $\frac{1}{2}$

2. $\frac{(2^6 \cdot 3^2)^{\frac{1}{2}}}{6^2} =$

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

3. $\frac{1}{\sqrt{10-3}} =$

- (a) $\frac{1}{\sqrt{10}} - \frac{1}{3}$ (b) 1 (c) $\sqrt{10} + 3$ (d) $3 - \sqrt{10}$ (e) $\frac{1}{\sqrt{7}}$

4. $\frac{x}{x+1} + \frac{1}{x-1} =$

- (a) $\frac{1}{x+1}$ (b) 1 (c) $\frac{1}{x-1}$ (d) $\frac{x^2+1}{x^2-1}$ (e) 1

5. $(x-2)(x^2+2x+4) =$

- (a) $x^3 + 4x^2 + 8x + 8$ (b) $x^3 - 8$ (c) $3x^2 - 2x - 8$ (d) $x^3 + 2x + 2$ (e) $x^3 - 2x^2 - 2x - 8$

6. If $2x^2 - 3x - 2 = 0$ then $x =$

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

7. If $2x + 3y = 6$ and $x + y = 1$ then $(x, y) =$

- (a) (-3, 4) (b) (0, 2) (c) (1, 1) (d) (4, -1) (e) none of these

8. If $y = \sqrt[3]{\frac{2x+1}{5}}$ then $x =$

- (a) $\sqrt[3]{\frac{5y-1}{2}}$ (b) $\left(\frac{5y-1}{2}\right)^3$ (c) $\frac{125y-1}{8}$ (d) $\frac{5y^3-1}{2}$ (e) $\frac{\sqrt[3]{5y-1}}{\sqrt[3]{2}}$

9. Find the remainder when $x^3 + x$ is divided by $x + 1$

- (a) 2 (b) 0 (c) -2 (d) x (e) x^2

10. If $|2x + 5| = 3$ then $x =$

- (a) ± 1 (b) ± 4 (c) 1 (d) -1 or -4 (e) none of these

11. If $3 - 2x - x^2 > 0$ then

- (a) $-1 < x < 3$ (b) $-3 < x < 1$ (c) $x < -1$ or $x > 3$ (d) $x < -3$ or $x > 1$ (e) none of these

12. $\log_{10}(\sqrt[3]{100}) =$

- (a) 64 (b) $\frac{3}{2}$ (c) 2 (d) $\frac{2}{3}$ (e) $\sqrt{3}$

13. The number $\log_2(15)$ is closest to which of the following numbers?

- (a) 0 (b) 2 (c) 4 (d) 20 (e) 10000

14. The distance between the points $(-1, 2)$ and $(3, 1)$ is

- (a) $\sqrt{17}$ (b) 5 (c) 1 (d) $\sqrt{5}$ (e) $2\sqrt{5}$

15. The equation of the straight line through the points $(-2, 1)$ and $(2, 3)$ is

- (a) $y = 2x + 1$ (b) $x - 2y + 1 = 0$ (c) $y = x + 2$ (d) $2y = x + 4$ (e) $y = 3x - 3$

16. A straight line with slope -2 and y intercept 3 goes through the point

- (a) $(-1, 5)$ (b) $(1, 5)$ (c) $(2, 2)$ (d) $(3, 0)$ (e) none of these

17. Bob is twice as old as Jim, but three years ago he was three times as old. How old is Bob (to the nearest year)?

- (a) 4 (b) 6 (c) 12 (d) 24 (e) 30

18. If $f(x) = x^3 + x^2 - 4$ then $f(-2) =$

- (a) -12 (b) -8 (c) 0 (d) 8 (e) 12

19. If $f(x) = x^2 + 2x$ then $f(x + h) =$

- (a) $x^2 + 2x + h$ (b) $x^2 + 2x + 2h$ (c) $x^2 + h^2 + x + h$ (d) $x^2 + 2(h + 1)x + 2h + h^2$ (e) $h^2 + 2h$

20. If $f(x) = \frac{5}{x+2}$ for what value of x does $f(x) = 2$?

- (a) 12 (b) 8 (c) $\frac{5}{4}$ (d) $\frac{1}{2}$ (e) $-\frac{2}{5}$

21. In a right triangle with sides of length 3, 4 and 5 and with θ the angle formed by the sides of length 3 and 5, $\cos(\theta) =$

- (a) $\frac{4}{5}$ (b) $\frac{3}{5}$ (c) $\frac{3}{4}$ (d) $-\frac{3}{5}$ (e) none of these

22. If $\tan(\theta) = 1$ then $\sin(\theta) =$

- (a) $\frac{1}{2}$ (b) $\frac{1}{\sqrt{2}}$ (c) $\pm \frac{1}{\sqrt{2}}$ (d) $\pm \frac{1}{2}$ (e) none of these

23. How many radians is 30° ?

- (a) $\frac{\pi}{3}$ (b) $\frac{2}{3}\pi$ (c) $\frac{\pi}{6}$ (d) π (e) none of these

24. A certain angle θ measures 1 radian. Which of the following numbers is closest to $\sin(\theta)$?

- (a) 0 (b) 1 (c) -1 (d) 2π (e) 180

25. Which of the following are true?

$$A : \sin(x + y) = \sin(x) + \sin(y) \quad B : \sec(x) = \frac{1}{\cos(x)} \quad C : \sin^2(x) + \cos^2(x) = 1$$

- (a) A and B (b) A and C (c) A and C (d) B and C (e) A and B and C