



Mathematics 12 Level
Challenge Exam
For

MECH

PRACTICE VERSION ONLY

Each question is followed by five possible answers labeled (a) through (e).
Select the one best answer to each question.

Calculators are **not** permitted.

You should be able to complete this practice test in approximately 60 minutes. The real test contains 60 multiple choice questions with a time limit of 90 minutes.

1. $3 \rightarrow 36 \cdot 7 \text{ C}$

- a) -3 b) 0 c) 9 d) 15 e) 21
-

2. $\frac{1}{u} \frac{5}{v}$

- a) $\frac{4}{u \cdot v}$ b) $\frac{4}{u \cdot v}$ c) $\frac{v \cdot 5u}{uv}$ d) $\frac{4}{uv}$ e) $\frac{u \cdot 5v}{uv}$
-

3. The graph of $x^2 - 4y - 8 = 0$ crosses the y -axis at $y =$

- a) -8 b) -2 c) 0 d) 2 e) 8
-

4. If $5x - 10 = 2 - 2x$, then $x =$

- a) $\frac{12}{7}$ b) $\frac{8}{7}$ c) $\frac{8}{7}$ d) $\frac{12}{7}$ e) 4
-

5. $4x^2y \cdot 3x^5y^4$

- a) $12x^7y^5$ b) $12x^{10}y^4$ c) x^3y^3 d) $12x^7y^4$ e) $x^{10}y^4$
-

9. The x-coordinate of the solution of the system of equations $\begin{cases} -3x + 6y = 4 \\ -x + 3y = 1 \end{cases}$ is

- a) $\frac{1}{15}$ b) $\frac{1}{3}$ c) 1 d) $\frac{6}{5}$ e) $\frac{5}{3}$
-

10. If $a = 4$ and $b = 3$, then $|a - b|$

- a) -7 b) -1 c) 1 d) 7 e) 12
-

11. $\frac{6m^2 - 3m}{3m}$

- a) $2m - 1$ b) $6m^2$ c) $3m$ d) $6m^2 - 1$ e) $5m$
-

12. The length L of a spring is given by $L = \frac{3}{4}F + 8$ where F is the applied force. What force F will produce a length of 10?

- a) $\frac{8}{3}$ b) $\frac{16}{3}$ c) $\frac{32}{3}$ d) $\frac{31}{2}$ e) 24
-

13. $\frac{27y^3}{x^{12}}$

- a) $\frac{27y^3}{x^{12}}$ b) $\frac{x^{12}}{27y^3}$ c) $\frac{x^{12}y^3}{27}$ d) $\frac{3y^3}{x^{12}}$ e) $27y^3x^{12}$
-

14. $\frac{x^2 - 9}{3x} - \frac{12}{2x - 6}$

- a) 3 b) 6 c) $2x - 3$ d) $\frac{2x - 3}{x}$ e) $\frac{2x - 3}{x}$
-

15. If $\frac{1}{x - 3} = 7 - \frac{x}{x - 3}$, then x

- a) $\frac{10}{3}$ b) $\frac{1}{3}$ c) $\frac{1}{3}$ d) $\frac{10}{3}$ e) 8
-

16.

20. Definition: A function is odd if $f(-x) = -f(x)$ for each x in the domain of f . Which of the functions whose graphs are shown is odd?

a)

b)

c)

d)

e)

21. Which of the following best resembles the graph of $\frac{1}{2} - 3x - x^2$?

a)

b)

c)

d)

e)

22. If $\log_4 x = 1 - 3$

24. If the point A has coordinates $(-4, 2)$ and the point C has coordinates $(5, 14)$, then the distance from A to C in the xy-

32. If $f(x) = \frac{2x - 6}{x - 2}$, then $f(a - 2)$

a) $\frac{5}{2}$

b) $\frac{2a - 8}{a - 4}$

c) $\frac{2a - 10}{a - 4}$

d) $\frac{2a - 6}{a - 2}$

e) $\frac{2a - 6}{a - 2}$

ANSWER SHEET FOR
MATHEMATICS 12 PRACTICE EXAM (FORMECH)

- | | |
|-------|-------|
| 1. E | 21. A |
| 2. C | 22. C |
| 3. D | 23. A |
| 4. D | 24. D |
| 5. A | 25. C |
| 6. B | 26. D |
| 7. B | 27. B |
| 8. A | 28. E |
| 9. D | 29. A |
| 10. D | 30. B |
| 11. A | 31. C |
| 12. A | 32. C |
| 13. B | 33. D |
| 14. E | 34. D |
| 15. D | 35. E |
| 16. A | 36. D |
| 17. B | 37. A |
| 18. D | 38. A |
| 19. C | 39. B |
| 20. E | 40. D |