



# 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.  $3 \rightarrow 36 \quad 7 \in \mathbb{C}$

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

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

- a)  $\frac{4}{u v}$       b)  $\frac{4}{u v} 4$

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 (FOR MECH)

- |       |       |
|-------|-------|
| 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 |