

7. The solution set of the equation $\frac{1}{x} = \frac{2}{x^2 - 3}$ is
- (A) $x = 1, 3$ (B) $x = 1, -3$ (C) $x = 0, 3$ (D) $x = -1, 3$
8. The equation of line passing through point $(-2, 3)$ and parallel to line $3x + y + 13 = 0$ is
- (A) $x - 3y + 6 = 0$ (B) $3x + y + 3 = 0$ (C) $2x - y + 9 = 0$ (D) $2x - y - 3 = 0$
9. If $f(x) = \frac{x^2}{x+2}$ and $g(x) = \sqrt{3-x}$, find the domain of function $(f - g)(x)$.
- (A) $(-\infty, -2) \cup (-2, 3]$ (B) $(-\infty, -2)$ (C) $(-\infty, 3]$ (D) $[3, +\infty)$
10. Find the inverse of function $f(x) = \frac{x}{x+2}$.
- (A) $f^{-1}(x) = \frac{x+2}{x}$ (B) $f^{-1}(x) = \frac{x+1}{2x}$ (C) $f^{-1}(x) = \frac{2x}{1-x}$ (D) $f^{-1}(x) = \frac{x}{x-2}$
11. Which of the following is one-to-one function?
- (A) $f(x) = |x+5|$ (B) $f(x) = (x+2)^2, x \leq 0$
 (C) $f(x) = \sqrt{x+3}$ (D) $f(x) = x^4$
12. The domain of the function $f(x) = \ln(x^2 - 1)$ is
- (A) $(-\infty, -1)$ (B) $(-\infty, -1) \cup (1, \infty)$ (C) $[1, \infty)$ (D) $(0, \infty]$
13. The range of the function $g(x) = \left(\frac{1}{4}\right)^x + 5$ is
- (A) $[5, +\infty)$ (B) $[0, +\infty)$ (C) $(-\infty, +\infty)$ (D) $(5, +\infty)$
14. A rectangle has area 200 cm^2 and a perimeter of 60 cm . Its length (l) and width (w) are
- (A) $l = 25 \text{ cm}, w = 8 \text{ cm}$ (B) $l = 40 \text{ cm}, w = 5 \text{ cm}$
 (C) $l = 20 \text{ cm}, w = 10 \text{ cm}$ (D) $l = 15 \text{ cm}, w = 15 \text{ cm}$
15. If $\log_2 32 = 7x - 2$, then x is
- (A) $\frac{18}{7}$ (B) 2 (C) 1 (D) 5
16. The solution of the exponential equation $10 - e^{5x-3} = 0$, correct to 4 decimal places, is
- (A) 1.0605 (B) -0.1395 (C) 5.3026 (D) 1.5794

17. The equation $\ln(1-x) = -1$ has the solution

- (A) $x = e^{-1} - 1$ (B) $x = 1 - e^{-1}$ (C) $x = 1 - e$ (D) No solution

18. The value of an investment of 250 rials, compounded continuously at a nominal annual rate of interest 7.5 %, after 6 years is

- (A) 492 rials (B) 592 rials (C) 392 rials (D) 292 rials

19. The expression $e^{\ln 7 + 3 \ln x}$ can be written as

- (A) $21x$ (B) $3x^7$ (C) $7x^3$ (D) $7 + x^3$

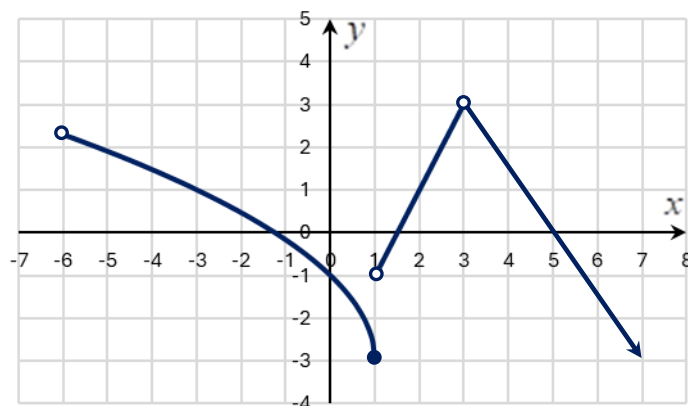
20. The solution set of the equations $\begin{cases} 12x - 25y = 7 \\ -24x + 50y = 14 \end{cases}$ is

- (A) $x = \frac{7}{12}, y = 0$ (B) $x = 0, y = -\frac{7}{25}$
 (C) $x = 0, y = \frac{7}{25}$ (D) None of these

21. Find the center and radius of the circle given by the equation: $x^2 + y^2 - 6x + 8y + 9 = 0$.

- (A) Center: $(-3, 4)$, Radius: 4 (B) Center: $(3, -4)$, Radius: 4
 (C) Center: $(6, -8)$, Radius: 9 (D) Center: $(6, -8)$, Radius: 3

22. The graph below represents function $g(x)$. Which of the following statements is TRUE ?



- (A) Domain of g : $[-6, 7]$ (B) $g(1) = -1$
 (C) Range of g : $(-\infty, 3)$ (D) x -intercepts of g : 1.5 and 5

23. The population P of a city at time t is given by the formula $P(t) = 50000e^{0.05t}$, where t is number of years after 2019. Predict the city population in year 2029.

- (A) 82436 (B) 83436 (C) 82634 (D) 86432

24. The graph of $g(x)$ is obtained when $f(x) = |x|$ is shifted one unit to the right and then shifted two units downward. The function $g(x)$ is
- (A) $g(x) = |x+1| + 2$ (B) $g(x) = |x-1| + 2$ (C) $g(x) = |x-2| - 1$ (D) $g(x) = |x-1| - 2$
25. Given that $f(x) = \sqrt{3x^2 - 26}$ and $g(x) = 6 - x$. Evaluate $(f \circ g)(-1)$.
- (A) Undefined (B) 7 (C) 11 (D) $-7\sqrt{29}$
26. The solution(s) of the equation $\log_x(2x+24) = 2$ is (are)
- (A) $x = -4, 6$ (B) $x = 6$ (C) $x = -4$ (D) $x = -6, 4$
27. The revenue generated by selling q units of graphing calculators is given by the function $R(q) = -0.3q^2 + 30q + 12$. The maximum expected revenue is
- (A) 50 (B) 762 (C) 672 (D) 596
28. The solution of the inequality $\frac{3x-2}{x+2} \geq 0$ is
- (A) $(-\infty, -2) \cup \left[\frac{2}{3}, \infty\right)$ (B) $\left(2, \frac{2}{3}\right]$
 (C) $\left[\frac{2}{3}, \infty\right)$ (D) $(-\infty, -\frac{2}{3}] \cup (2, \infty)$
29. The solution(s) of the equation $10^{2-\log x} = 3x+10$ is
- (A) -10 (B) 5 (C) -2, 5 (D) 2, -5
30. Find the Present value of 8 000 rials due after 5 years if the interest rate is 10 % compounded monthly.
- (A) 4 862 rials (B) 5 866 rials (C) 13 162 rials (D) 8 000 rials
31. The following system of inequalities $\begin{cases} x \leq 0 \\ y > -1 \\ y - 2x > 2 \end{cases}$ is satisfied by
- (A) $x=1, y=0$ (B) $x=0, y=1$
 (C) $x=-1, y=1$ (D) None of these
32. Solve the equation $A = P(1+rt)$ for t .
- (A) $t = \frac{P-A}{rP}$ (B) $t = \frac{A-P}{rP}$ (C) $t = \frac{rP}{P-A}$ (D) $t = \frac{rP}{P+A}$

33. How long will it take to double an investment of 6000 Rials if invested at an interest rate of 4 % compounded quarterly?
- (A) 17.7 years (B) 8 years (C) 17.3 years (D) 17.4 years
34. Solve the system: $\begin{cases} x - y = 4 \\ y = \sqrt{x + 2} \end{cases}$.
- (A) $x = 7, y = 3$ and $x = 2, y = -2$ (B) $x = 2, y = -2$
 (C) $x = 7, y = 2$ (D) $x = 7, y = 3$
35. The angle of elevation to the top of a flagpole is found to be 35° from the ground at a distance of 25 meters (m) from the base of the flagpole. Find the height of the flagpole.
- (A) 14.3 (m) (B) 17.5 (m) (C) 10 (m) (D) 11.8 (m)
36. Let θ be an acute angle of a right triangle. If $\cos \theta = \frac{\sqrt{3}}{2}$, find the value of $\csc \theta$.
- (A) $\frac{2}{\sqrt{3}}$ (B) $\frac{3}{2}$ (C) $\frac{1}{2}$ (D) 2
37. The length of an arc of a circle with radius 10 meters (m) that subtends a central angle of 30° is
- (A) 5 (m) (B) $\frac{5\pi}{3}$ (m) (C) $\frac{10\pi}{3}$ (m) (D) 10π (m)
38. A quiz consists of six Multiple-Choice Questions (with three choices each) and four TRUE-FALSE questions. In how many different ways can the quiz be answered?
- (A) $3^6 + 2^4$ (B) $6^3 \times 4^2$ (C) $3^6 \times 2^4$ (D) $6^3 + 4^2$
39. In a sample of 15 observations, the largest observation is increased by 60. The mean will be
- (A) increase by 4 (B) increase by 60 (C) increase by 15 (D) remain the same
40. A bag contains nine equally round balls of which five are blue and four are red. Two ball are drawn at random without replacement. What is the probability that both balls will be blue?
- (A) $\frac{5}{36}$ (B) $\frac{5}{9}$ (C) $\frac{1}{2}$ (D) $\frac{5}{18}$

End of Test

Mathematics for Economics – FPMT0107**EXIT TEST**

(Sample)

ANSWER KEY

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
A	C	B	A	D	B	D	B	A	C
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
C	B	D	C	C	B	B	C	C	D
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
B	C	A	D	C	B	B	A	B	A
Q31	Q32	Q33	Q34	Q35	Q36	Q37	Q38	Q39	Q40
C	B	D	D	B	D	C	C	A	D