PRINTABLE VERSION

Practice Test 2

Question 1

Solve the following equation for x: $\frac{1}{3\,x} + \frac{4}{81\,x} = -31$

a) $\frac{1}{27}$

b) -1

c) $\frac{1}{81}$

d) $-\frac{1}{27}$

e) $-\frac{1}{81}$

f) None of the above.

Question 2

Solve the system for x:

$$3\,x + y = -33$$
$$2\,x - y = 3$$

a) 6

b) -6

c) 4

d) -4

e) -7

f) None of the above.

Question 3

Paul has 12 coins in his pocket, consisting entirely of dimes and quarters. If he has a total of 240 cents in coins, how many coins of each type are in his pocket?

a) 4 dimes and 8 quarters

b) 8 dimes and 4 quarters

c) 7 dimes and 5 quarters

d) 9 dimes and 3 quarters

e) 5 dimes and 7 quarters

f) None of the above.

Question 4

Solve the following system:

$$\begin{aligned} -5\,x - 3\,y &= 3 \\ -\frac{x}{3} - \frac{y}{5} &= 4 \end{aligned}$$

a) $x = 20,\ y = -34$

b) No solution.

c) Infinitely many solutions.

d) $x = 19,\ y = -33$

e) $x = \frac{39}{2},\ y = -\frac{67}{2}$

f) None of the above.

Question 5

Use completing the square to rewrite the equation: $x^2 + 20\,x - 6 = 0$

a) $(x+20)^2 = 100$

b) $(x-10)^2 = 106$

c) $(x+10)^2 = 106$

d) $(x+10)^2 = 206$

e) $(x-10)^2 = 206$

f) None of the above.

Question 6

Solve the equation: $x^2 - 6x = -8$

a) $x = -2,\ x = -4$

b) $x = 2,\ x = 2$

c) $x = -2,\ x = 4$

d) $x = 2,\ x = 4$

e) $x = 2,\ x = -4$

f) None of the above.

Question 7

You need to order carpet for a room that has a length that is twice its width. If the area of the room is 162, find the width of the room.

a) 11

b) 8

c) 9

d) 6

e) 10

f) None of the above.

Question 8

Simplify the following expression and write in the form $a + bi$:

$$\frac{1+\sqrt{-64}}{\sqrt{-81}\cdot\sqrt{-16}}$$

a) $\frac{1}{36}-\frac{2}{9}\,i$

b) $\frac{1}{9}+2\,i$

c) $-\frac{1}{9}-2\,i$

d) $\frac{1}{36}+\frac{2}{9}\,i$

e) $-\frac{1}{36}-\frac{2}{9}\,i$

f) None of the above.

Question 9

Write the following expression in the form $a + bi$.

$$\frac{6\,i+1}{4+i}$$

a) $\frac{10}{17}+\frac{23}{17}i$

b) $\frac{2}{15}-\frac{23}{15}i$

c) $-\frac{10}{17}+\frac{23}{17}i$

d) $\frac{10}{17}-\frac{23}{17}i$

e) $-\frac{10}{17}-\frac{23}{17}i$

f) None of the above.

Question 10

Find all complex solutions to the equation: $25\,x^2+36=0$

a) $x=\frac{5}{6}\,i,\ x=-\frac{5}{6}\,i$

b) $x=6\,i,\ x=-6\,i$

c) $x=\frac{6}{5}\,i,\ x=-\frac{6}{5}\,i$

d) $x=\frac{6}{5},\ x=-\frac{6}{5}$

e) $x=\frac{5}{6},\ x=-\frac{5}{6}$

f) None of the above.

Question 11

Use the quadratic formula to find all complex solutions to the equation: $3\,x^2+3\,x+4=0$

a) $x=-\frac{1}{2}+\frac{\sqrt{39}}{6}\,i,\ x=-\frac{1}{2}-\frac{\sqrt{39}}{6}\,i$

b) $x=-\frac{3}{2}+\frac{\sqrt{39}}{2}\,i,\ x=-\frac{3}{2}-\frac{\sqrt{39}}{2}\,i$

c) $x=-3+\frac{\sqrt{39}}{6}\,i,\ x=-3-\frac{\sqrt{39}}{6}\,i$

d) $x=-\frac{1}{2}+\frac{13}{2}\,i,\ x=-\frac{1}{2}-\frac{13}{2}\,i$

e) None of the above.

Question 12

Find all solutions to the following equation: $x^3 - 5x^2 - 4x + 20 = 0$

a) $x = 5,\ x = 4$

b) $x = -5,\ x = 5$

c) $x = -20,\ x = 2,\ x = 5$

d) $x = 0,\ x = 5,\ x = 2$

e) $x = 5,\ x = -2,\ x = 2$

f) None of the above.

Question 13

Use substitution to find all solutions to the following equation: $(x+6)^2 - (x+6) - 6 = 0$

a) $x = -3,\ x = -8$

b) $x = -6$

c) $x = 3,\ x = 3$

d) $x = 0,\ x = 3,\ x = -8$

e) $x = 9,\ x = -6$

f) None of the above.

Question 14

Use substitution to find all solutions to the following equation: $x^4 - 32x^2 - 144 = 0$

a) $x = -2,\ x = 2,\ x = -6i,\ x = 6i$

b) $x = -2,\ x = 2$

c) $x = -6,\ x = 6,\ x = -2i,\ x = 2i$

d) $x = -6,\ x = 6$

e) $x = -2,\ x = 2,\ x = -6,\ x = 6$

f) $x = -36,\ x = 4$

g) None of the above.

Question 15

Find all solutions to the following equation: $\sqrt{x+4} + 2 = x$

a) $x = 5$

b) $x = 3$

c) $x = 5,\ x = 3$

d) $x = 0\ x = 2,\ x = 8$

e) $x = 0,\ x = 5$

f) $x = 4,\ x = 2$

g) None of the above.

Question 16

Find all solutions to the following equation: $x - 9\sqrt{x} + 20 = 0$

a) $x = 16,\ x = 25$

b) $x = -5,\ x = -4$

c) $x = 5,\ x = 4$

d) $x = 0\ x = 4,\ x = 10$

e) $x = 2,\ x = \sqrt{5}$

f) $x = 0,\ x = 20$

g) None of the above.

Question 17

Express the solution of the following inequality in interval notation.

$$11x + 12 < 22x - 6$$

a) $(6/11, \infty)$

b) $(-\infty, 6/11)$

c) $(-\infty, 18/11)$

d) $(18/11, \infty)$

e) $(16/11, \infty)$

f) None of the above.

Question 18

Solve for x:

$$-4 \leq \frac{3x + 11}{7} < 3$$

a) $[-5, 10/3)$

b) $(-13, 10/3]$

c) $[-13, 10/3)$

d) $[-13, -8/3)$

e) $(-13, 10/3)$

f) None of the above.

Question 19

Solve the following compound inequality.

$$-10 < -2x \leq 10$$

a) $-5 \leq x < 5$

b) All real numbers

c) $x > -5$ or $x < 5$

d) $x \leq -5$ or $x > 5$

e) -55

f) None of the above.

Question 20

Solve the inequality for x and express the solution in interval notation: $4x^2 - 48 > x^2 + 18x$

a) $(-\infty, -8) \cup (2, \infty)$

b) $(-\infty, -2] \cup [8, \infty)$

c) $(-8, 2)$

d) $[-2, 8]$

e) $(-\infty, -2) \cup (8, \infty)$

Question 21

Solve the inequality for x, given that: $x\ (2x - 12)(6x - 54) \geq 0$

a) $[0, 6] \cup [9, \infty)$

b) $(-\infty, 2) \cup (6, 9)$

c) $(0, 6) \cup (6, \infty)$

d) $[0, 6] \cup [6, \infty)$

e) $(-2, 6] \cup [9, \infty)$

Question 22

You did not answer the question.

Solve the inequality for x, given that: $\dfrac{4x+1}{x-3} \leq 0$

a) $[-4, 3)$

b) $\left[-\dfrac{1}{4}, 3\right)$

c) $(-\infty, 3) \cup (3, \infty)$

d) $\left(-\infty, -\dfrac{1}{4}\right] \cup (3, \infty)$

e) $\left[-\dfrac{1}{4}, 3\right]$

Question 23

Solve the inequality for x, given that: $\dfrac{2x-10}{(x-2)(x-8)} < 0$

a) $(-\infty, 5) \cup (5, \infty)$

b) $(-\infty, -5) \cup (5, 8)$

c) $(-\infty, 2) \cup (5, \infty)$

d) $(-\infty, 2) \cup (5, 8)$

e) $(-\infty, -2) \cup (5, 8)$

Question 24

Solve the inequality for x, given that: $\dfrac{6-x}{x-5} \geq -4$

a) $\left(\dfrac{14}{3}, \infty\right)$

b) $\left(-\infty, \dfrac{14}{3}\right)$

c) $\left(-\infty, \dfrac{14}{3}\right] \cup [5, \infty)$

d) $\left(-\infty, \frac{14}{3}\right] \cup (5, \infty)$

e) $\left[\frac{14}{3}, \infty\right)$

Question 25

Solve the inequality for x, given that: $\frac{1}{x-3} + \frac{2}{3\,x-24} \geq 0$

a) $[3, 6] \cup [8, \infty)$

b) $(3, 6] \cup (8, \infty)$

c) $(-\infty, 6) \cup (6, \infty)$

d) $(-8, 3) \cup (6, \infty)$

e) $(-\infty, 3) \cup [6, 8)$

Question 26

Solve the for x: $-3 \mid 2-3x \mid +6 = 5$

a) No Solution.

b) $\{1,\ -1\}$

c) $\left\{\frac{5}{9}, -\frac{5}{9}\right\}$

d) $\left\{\frac{5}{9}, \frac{7}{9}\right\}$

e) $\{1\}$

Question 27

Solve the following inequality and give the answer in interval notation: $14 - 2 \mid x+4 \mid > 8$

a) $(-\infty, -7) \cup (-1, \infty)$

b) $\left(-\infty, -\frac{14}{3}\right) \cup \left(-\frac{10}{3}, \infty\right)$

c) $\left(-\frac{14}{3}, -\frac{10}{3}\right)$

d) No Solution.

e) $(-7, -1)$

Question 28

Solve the following inequality and give the answer in interval notation: $\left|\frac{x-3}{2}\right| \geq 8$

a) $[-13, 19]$

b) $\left(-\infty, \frac{11}{4}\right) \cup \left(\frac{13}{4}, \infty\right)$

c) $\left(-\infty, \frac{11}{4}\right] \cup \left[\frac{13}{4}, \infty\right)$

d) No Solution.

e) $(-\infty, -13] \cup [19, \infty)$

Question 29

Solve the following inequality and give the answer in interval notation: $|2x - 5 \mid +12 < 10$

a) $(-\infty, -6) \cup (-4, \infty)$

b) No Solution.

c) $\left(\frac{3}{2}, \frac{7}{2}\right)$

d) $\left(-\infty, \frac{3}{2}\right) \cup \left(\frac{7}{2}, \infty\right)$

e) $(-6, -4)$

Question 30

Solve the following inequality and give the answer in interval notation: $|2 - 3x \mid \geq -5$

a) No Solution.

b) $\left[\frac{7}{3}, \infty\right)$

c) $\left[-1, \frac{7}{3}\right]$

d) $(-\infty, -1] \cup \left[\frac{7}{3}, \infty\right)$

e) $(-\infty, \infty)$