PC12: What do you Remember from Pre-Calculus 11? Name: _____

1. Is $\sqrt{\frac{9}{4}}$ rational or irrational?
   A. Rational
   B. Irrational

2. Is $2.\overline{6}$ rational or irrational?
   A. Rational
   B. Irrational

3. Is π rational or irrational?
   A. Irrational
   B. Irrational

4. Evaluate $-2(-2)^{-2}$.
   The answer in reduced from $\frac{a}{b}$. Given $a < 0$, find b.
   A. 1
   B. 2
   C. 3
   D. 4
   E. 5
   F. None of these

5. Simplify $\left(\sqrt[3]{x^2}\right)\left(\sqrt{x^5}\right)$
   The answer is $x^{\frac{a}{b}}$. Find the numerator a only.
   A. 8
   B. 7
   C. 15
   D. 19
   E. 11
   F. None of these

6. Sort from least to greatest: $\sqrt{8}, 2\sqrt{3}, 3\sqrt{2}, 2.5$

   A. IV, I , II, III
   B. I, IV, II, III
   C. II, III, IV, I
   D. III, II, I IV
   E. III, I, II, IV
   F. None of these

7. Solve $\sqrt{x-3} = 9 - 2x$
   A. 1
   B. 2
   C. 3
   D. 4
   E. 5
   F. None of these

8. When solving $\sqrt{x-3} = 9 - 2x$ the value of the extraneous root is $x = \frac{a}{b}$. Find a only.
   A. 17
   B. 19
   C. 21
   D. 23
   E. 25
   F. None of these

9. $y_1 = 2\sqrt{2-x}$ and $y_2 = x + 1$. Find the y-value of the point of intersection.
   A. 0
   B. 1
   C. 2
   D. 3
   E. 4
   F. None of these

10. $y = \sqrt{6-2x}$. Find the domain.
   A. $x \leq 6$
   B. $x \geq 6$
   C. $x \leq 3$
   D. $x \geq 3$
   E. $x \leq 12$
   F. None of these

11. Find the greatest common factor of: $12x^5y^2, 8x^3y^5, 16x^4y^3, 8x^5yz^2$
   A. $x^5y^5z^2$
   B. xyz
   C. $4xyz$
   D. x^3yz^2
   E. $4xyz^2$
   F. $4x^3y$

12. $4x^2 + 18x - 36$ in fully factored form is $a(bx + c)(x + d)$.
   Find d only.
   A. 2
   B. 3
   C. 4
   D. 5
   E. 6
   F. None of these

13. If possible, factor $9x^6 - 16y^4$

A. This binomial cannot be factored
B. $(9x^3 - 4y^2)^2$
C. $(3x^3 - 4y^2)^2$
D. $(3x^3 + 4y^2)^2$
E. $(3x^3 + 4y^2)(3x^3 - 4y^2)$
F. None of these

14. Hint: $\sin^3 x$ means $(\sin x)^3$
Factor $9\cos^2 x - 12\cos x + 4$

A. $(3\sin x + 2)(3\sin x - 2)$
B. $(3\sin x + 2)^2$
C. $(3\cos x - 2)^2$
D. $(3\cos x + 2)(3\cos x - 2)$
E. $(3\cos x + 2)^2$
F. This expression cannot be factored

15. Simplify $\frac{x}{x-2} \div \frac{2x}{x^2-4} \times 6$. The answer is $ax + b$. Find a only.

A. 1
B. 2
C. 3
D. 4
E. 5
F. None of these

16. Which of the following are non-permissible values for the following rational expression?
$\frac{x}{x-2} \div \frac{2x}{x^2-4} \times 6$. Choose MORE than one answer.

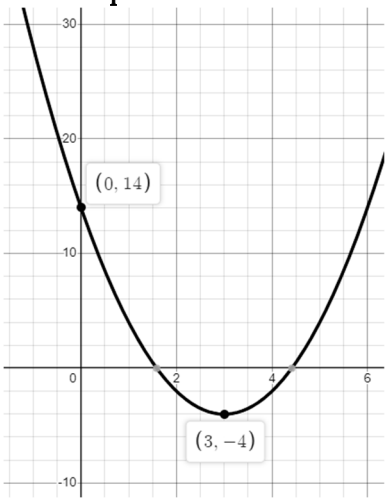
A. 0
B. 1
C. 2
D. -2
E. 6
F. 4

17. Simplify $\frac{2}{x+3} - \frac{1}{x^2-9} \div \frac{x}{8}$ into a single term.
The numerator is $a(x + b)(x - c)$. Find b only.

A. 1
B. 2
C. 3
D. 4
E. 5

F. None of these

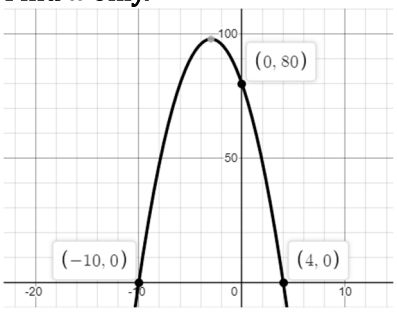
18. See the quadratic below:



The equation in standard form is $y = ax^2 + bx + c$.
Find b only.

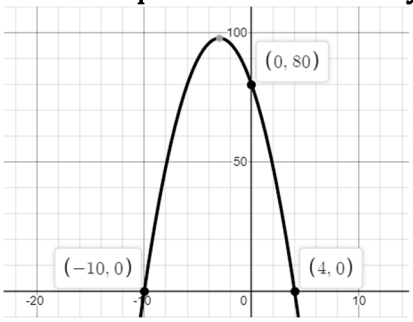
A. 3
B. -6
C. 14
D. -12
E. -8
F. None of these

19. The parabola below is $y = ax^2 + bx + c$.
Find a only.



A. 1
B. -1
C. 2
D. -2
E. 3
F. -3

20. Find the equation of the line of symmetry of the parabola below:



A. $y = -2$
B. $x = -2$

C. $y = -3$
D. $x = -3$
E. $y = 98$
F. None of these

21. $f(x) = -x^2 + 4x - 8$. Evaluate $f(-1)$.
A. -12
B. -13
C. 12
D. 13
E. 8
F. None of these

22. Find the range of $f(x) = -x^2 + 4x - 8$.
A. All real numbers
B. $y \geq -4$
C. $y < 2$
D. $y \geq 2$
E. $y \leq 2$
F. $y \leq -4$

23. $f(x) = 3(x-4)^2 - 1$. Find the x-value of the vertex.
A. 3
B. -3
C. 4
D. -3
E. 1
F. -1

24. Complete the square on $y = 3x^2 - 12x + 8$.
The y-value of the vertex is:
A. 4
B. -4
C. 3
D. -3
E. 2
F. -2

25. $f(x) = (x+1)^2 - 4$.
$g(x)$ is $f(x)$ shifted 3 units to the left and one unit up.
Given $g(x) = ax^2 + bx + c$, find b only.
A. 6
B. 8
C. 1
D. 4
E. 13
F. None of these

26. Find the value of the largest root: $y = 2x^2 - 3x - 4$. The answer is $x = \frac{a+\sqrt{k}}{b}$. Find k only.
A. 41
B. 43
C. 8
D. 13

E. 17
F. None of these

27. Find the smallest value of x given: $3(2x-1)^2 = 27$
A. -2
B. -1
C. 1
D. 2
E. 3
F. None of these

28. You have 80 m of fencing on a rectangular property.
One side of your property is adjacent to a lake (so no fencing is required).
What is the maximum area?
A. 40
B. 80
C. 400
D. 600
E. 800
F. 1600

29. Solve $3 - 5x \leq 7 - x$
A. $x \geq 1$
B. $x \geq -1$
C. $x \leq 1$
D. $x \leq -1$
E. $x \leq 2$
F. None of these

30. Solve $0 \geq x^2 + 2x - 8$
A. $-4 \leq x \leq 2$
B. $-2 \leq x \leq 4$
C. $x \leq -4$ or $x \geq 2$
D. $x \leq -2$ or $x \geq 4$
E. $x \geq -9$
F. None of these

31. Solve $2x^2 = 8x$. Choose one or more answers.
A. 2
B. 16
C. 4
D. 0
E. -4

F. -2

32. Given $4x^2 + 2y < 8x - 1$, which of the following points are in the solution region? Choose MORE than one answer.
    A. $(1, -2)$
    B. $(2, -1)$
    C. $(3, 1)$
    D. $(2, -5)$
    E. $(-1, 0)$
    F. $(0, -2)$

33. Find the range of $y = -3(x + 2)^2$
    A. $y \in [-3, \infty)$
    B. $y \in (\infty, -3]$
    C. $y \in (-\infty, 3]$
    D. $y \in (-\infty, -3]$
    E. $y \in (-\infty, 0]$
    F. $y \in (-\infty, 2]$

34. Evaluate $\cos 135^\circ$
    A. $1/2$
    B. $1/\sqrt{2}$
    C. $-\sqrt{2}/2$
    D. $\sqrt{3}/2$
    E. $-\sqrt{3}/2$
    F. None of these

35. Evaluate $\tan 300^\circ$
    A. $1/2$
    B. $\sqrt{2}/2$
    C. $-\sqrt{3}/2$
    D. $\sqrt{3}$
    E. $-\sqrt{3}$
    F. None of these

36. Evaluate $\cos(-270^\circ)$
    A. 1
    B. -1
    C. 0
    D. π
    E. $-\sqrt{3}/2$
    F. None of these

37. In ΔABC, $\angle A = 70^\circ$, $b = 4$, and $\angle C = 30^\circ$. Find c.
    The answer in simplified form is $\frac{k}{\sin\theta}$. Find k
    A. 1
    B. 2
    C. 3
    D. 4
    E. 5

F. None of these

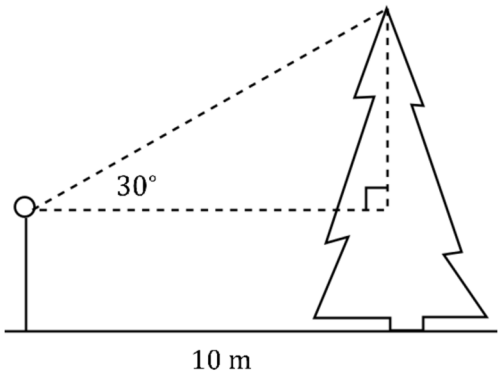
38. In $\Delta ABC, b = 3, a = 6,$ and $\angle C = 30°$. Find c.
The answer is $c = \sqrt{k - r}$. Find k only.
A. 9
B. 25
C. 36
D. 32
E. 45
F. None of these

39. $\theta = 500°$ in standard position. Find the reference angle.
A. $20°$
B. $40°$
C. $140°$
D. $60°$
E. $80°$
F. None of these

40. Which of the following angles are coterminal to $\theta = 10°$?
A. $360°$
B. $-370°$
C. $-350°$
D. $-720°$
E. $1080°$
F. None of these

41. Find the coordinates of $P(\theta = 330°)$ on the unit circle.
A. $\left(\frac{1}{2}, -\frac{\sqrt{2}}{2}\right)$
B. $\left(\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$
C. $\left(\frac{\sqrt{2}}{2}, -\frac{\sqrt{3}}{2}\right)$
D. $\left(\frac{\sqrt{2}}{2} - \frac{1}{2}\right)$
E. $\left(\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$
F. None of these

42. Suppose you are 2 m tall. Find the exact height of the tree:



A. 10
B. $\frac{10}{\sqrt{3}}$
C. $\frac{\sqrt{3}}{10}$
D. 12
E. $\frac{\sqrt{3}}{10} + 2$
F. $\frac{10\sqrt{3}+6}{3}$

43. Which of the following are solutions within the domain $\theta \in [0, 360°]$: $\tan\theta = -\sqrt{3}$
Choose MORE than one answer.

A. $30°$
B. $60°$
C. $120°$
D. $135°$
E. $300°$
F. $330°$

44. The compound interest formula is $A = P\left(1 + \frac{i}{n}\right)^{nt}$.
Given interest is compounded monthly we set:

A. $A = 12$
B. $P = 12$
C. $i = 12$
D. $n = 12$
E. $t = 12$
F. None of these

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6 CHOICE 50Q (4934)

1	A	B	C	D	E	F	22	A	B	C	D	E	F	43	A	B	C	D	E	F			
2	A	B	C	D	E	F	23	A	B	C	D	E	F	44	A	B	C	D	E	F			
3	A	B	C	D	E	F	24	A	B	C	D	E	F	45	A	B	C	D	E	F			
4	A	B	C	D	E	F	25	A	B	C	D	E	F	46	A	B	C	D	E	F			
5	A	B	C	D	E	F	26	A	B	C	D	E	F	47	A	B	C	D	E	F			
6	A	B	C	D	E	F	27	A	B	C	D	E	F	48	A	B	C	D	E	F			
7	A	B	C	D	E	F	28	A	B	C	D	E	F	49	A	B	C	D	E	F			
8	A	B	C	D	E	F	29	A	B	C	D	E	F	50	A	B	C	D	E	F			
9	A	B	C	D	E	F	30	A	B	C	D	E	F										
10	A	B	C	D	E	F	31	A	B	C	D	E	F										
11	A	B	C	D	E	F	32	A	B	C	D	E	F										
12	A	B	C	D	E	F	33	A	B	C	D	E	F										
13	A	B	C	D	E	F	34	A	B	C	D	E	F										
14	A	B	C	D	E	F	35	A	B	C	D	E	F										
15	A	B	C	D	E	F	36	A	B	C	D	E	F										
16	A	B	C	D	E	F	37	A	B	C	D	E	F										
17	A	B	C	D	E	F	38	A	B	C	D	E	F										
18	A	B	C	D	E	F	39	A	B	C	D	E	F										
19	A	B	C	D	E	F	40	A	B	C	D	E	F										
20	A	B	C	D	E	F	41	A	B	C	D	E	F										
21	A	B	C	D	E	F	42	A	B	C	D	E	F										

Key

A	B	C