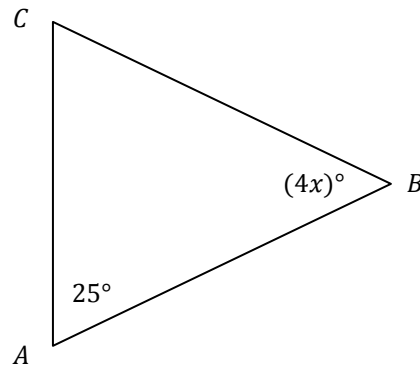


Practice MDPT #3

1. If $\left| \frac{6-x}{4} \right| > 5$, then
- a) $x < -14$ or $x > 26$ b) $-26 < x < 14$ c) $-14 < x < 26$
 d) $-20 < x < 20$ e) $x < -14$ and $x > 26$

2. One root of $9x^2 - 3x - 3$ is
- a) $\frac{-3-\sqrt{117}}{18}$ b) $\frac{3+\sqrt{99}}{18}$ c) $\frac{-3+\sqrt{117}}{18}$ d) $\frac{3+\sqrt{117}}{18}$ e) $\frac{3-\sqrt{117}}{2}$

3. In the triangle ABC to the right, the length AB is equal to the length of BC . What is x ?
- a) $\frac{25}{2}$ b) $\frac{155}{8}$ c) $\frac{65}{2}$
 d) 10 e) $\frac{155}{4}$



4. $\frac{y}{x+6y} - \frac{5}{8x-8} =$
- a) $\frac{8xy+22y-5x}{8x^2+48xy-8x-48y}$ b) $\frac{8xy-38y-5x}{8x^2+48xy-8x-48y}$
 c) $\frac{8xy+22y+5x}{8x^2+48xy-8x-48y}$ d) $\frac{y-5}{8x^2+48xy-8x-48y}$
 e) $\frac{y-5}{-7x+6y-8}$

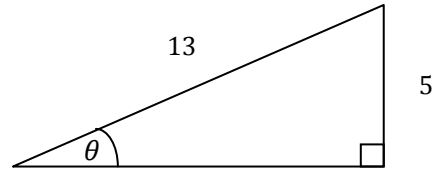
5. If $4^x \cdot 4^{x+15} = 64^{x-4/3}$, then $x =$
- a) $-\frac{4}{3}$ b) 11 c) 19 d) $\frac{19}{3}$ e) $\frac{-12+\sqrt{128}}{2}$

6. By completing the square, $x^2 + 26x - 6 =$
- a) $(x + 13)^2 - 175$ b) $(x - 169)^2 - 163$ c) $(x + 13)^2 - 163$
 d) $(x - 13)^2 + 175$ e) $(x + 169)^2 + 163$

7. The inequality $x^2 + 27 > 12x$ is equivalent to
- a) $x > 3$ and $x > 9$ b) $3 < x < 9$ c) $-9 < x < -3$
 d) $x < 3$ or $x > 9$ e) $x < -3$ or $x < -9$

8. In the triangle to the right, what is $\sec \theta$?

- a) $\frac{12}{13}$ b) $\frac{12}{5}$ c) $\frac{5}{13}$
 d) $\frac{5}{12}$ e) $\frac{13}{12}$



9. $\frac{x^2 - 4x - 5}{x^2 - 49} \div \frac{2x + 2}{7 - x} =$

- a) $\frac{x - 5}{x + 7}$ b) $\frac{1}{-2(x + 7)}$ c) $\frac{x - 5}{-2(x + 7)}$ d) $\frac{x + 5}{2(x + 7)}$
 e) $\frac{-2(x + 5)}{x + 7}$

10. One solution to $2z^2 + 50 = 0$ is

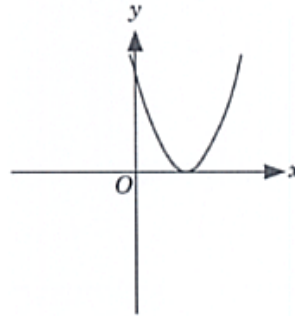
- a) $5i$ b) -5 c) -25 d) 5 e) $25i$

11. $\sqrt{49x^8y^4 - 49y^4} =$

- a) $49y^2\sqrt{x^8 - 1}$ b) $7x^4y^2 - 7y^2$ c) $49x^4y^2 - 49y^2$ d) $7y^2\sqrt{x^8 - 1}$
 e) $7x^4y^2$

12. An equation for the graph at the right is

- a) $y = x^2 - 2$ b) $y = -x^2 + 2$
 c) $y = (x + 2)^2$ d) $y = (x - 2)^2$
 e) $y = -(x + 2)^2$



13. The diameter of a circle is increased by a factor of 4. If the original area was 10, what is the new area?

- a) 14 b) 40π c) 80π d) 80 e) 160

14. If $\log_9(x^2 - 28) - \log_9 x = \frac{1}{2}$, then $x =$

- a) $\sqrt{28}$ b) 7 c) 4 d) $\frac{1 + \sqrt{125}}{2}$ e) -4 and 7

15. The equation of the line that is parallel to the line $y = \frac{4}{5}x - 2$ containing the point $(5, -2)$ is

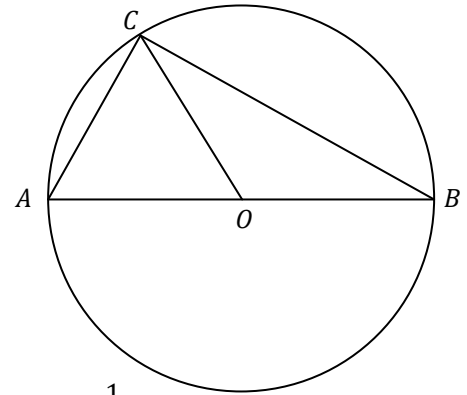
- a) $y = -\frac{5}{4}x + \frac{17}{4}$ b) $y = \frac{4}{5}x - 6$ c) $y = \frac{4}{5}x - \frac{1}{5}$
 d) $y = -\frac{4}{5}x + \frac{8}{5}$ e) $y = \frac{4}{5}x + 6$

16. In the solution to the system of linear equations $2x - 3y = -11$, $x =$
 $-4x + y = -3$
- a) 2 b) 3 c) -2 d) 5 e) -1

17. If $f(x) = 4x - \frac{2}{5}$, then $f^{-1}(x) =$
- a) $\frac{1}{4x-2/5}$ b) $\frac{x}{4} + \frac{1}{10}$ c) $\frac{x}{4} + 10$ d) $-4x + \frac{2}{5}$ e) $\frac{x}{4} - \frac{1}{10}$

18. In the figure at the right, AB is a diameter of the circle with center O . If the length of OC is 15 and the length of BC is 24, what is the length of AC ?

- a) 18 b) 15 c) $\sqrt{351}$
d) 17 e) 20



19. $\frac{\sqrt[3]{64x}}{\sqrt{64x}} =$
- a) $\frac{1}{\sqrt[6]{x}}$ b) $8\sqrt[6]{x}$ c) $\frac{1}{2}$ d) $\frac{\sqrt{x}}{2}$ e) $\frac{1}{2\sqrt[6]{x}}$

20. The inequality $x^2 - 10x < -21$ is equivalent to
- a) $-7 < x < -3$ b) $x > 3$ or $x < 7$ c) $x < 3$ or $x > 7$ d) $3 < x < 7$
e) $2 < x < 5$

21. $\frac{\frac{2}{x-6} + \frac{14}{(x-6)^2}}{x+1} =$
- a) $\frac{2(x+1)^2}{(x-6)^2}$ b) $\frac{2}{(x-6)^2}$ c) $\frac{14(x+1)}{x-6}$ d) $\frac{2}{(x+1)(x-6)^2}$
e) $\frac{16x+16}{(x-6)^2}$

22. $(81a^{-4}b^{12}c^8)^{\frac{1}{4}} =$
- a) $3b^3$ b) $3ab^3c^2$ c) $\frac{3b^3c^2}{a}$ d) $\frac{b^3c^2}{3a}$ e) $\frac{b^3}{3a}$

23. Cristine Joy has a circular garden plot of area A square feet. If she triples the diameter of the garden, what is the new area of her garden?
- a) $9A$ b) $9A^2$ c) $3A^2$ d) $(A + 3)^3$ e) $3A$

24. $\frac{x^5y}{(4x^{-1}y^2)^{-4}} =$
 a) $\frac{256}{xy^7}$ b) $\frac{y^9}{256x^9}$ c) $\frac{1}{16x^9y^7}$ d) $\frac{256x}{y^9}$ e) $256xy^9$

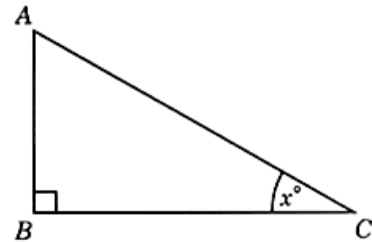
25. $\frac{x^2+4x-77}{x^2-15x+56} =$
 a) $\frac{2x-77}{-11x+56}$ b) $\frac{x+11}{x+8}$ c) $\frac{x+13}{x-8}$ d) $\frac{x+11}{x-8}$
 e) $\frac{4x-77}{-15x+56}$

26. If $f(x) = |x|$ and $g(x) = x^3 - 5x - 6$, then $(f \circ g)(-2) =$
 a) -4 b) -12 c) 4 d) -8 e) 8

27. The point $(-2, 7)$ is reflected across the y -axis, then shifted down 3 units, then reflected across the line $y = x$. Where is the point now?
 a) $(7, -2)$ b) $(2, 4)$ c) $(4, -2)$ d) $(4, 2)$ e) $(-2, 4)$

28. In the right triangle ABC as shown to the right, the length of AB is 10 and the measure of $\angle ACB$ is x degrees. What is the length of BC ?

a) $\frac{\tan x}{10}$ b) $10 \sin x$ c) $\frac{10}{\tan x}$ d) $\frac{\sin x}{10}$
 e) $10 \tan x$



29. If $x^4(7x - 1) = 7x - 1$ and x is a *real number*, then $x =$
 a) $-1, 1$ and $\frac{1}{7}$ b) $-1, 1, -i, i$ and $\frac{1}{7}$ c) -1 and 1 d) $-1, 1$ and $-\frac{1}{7}$
 e) $-1, 1, -i$ and i

30. $(cd^4)^6 \cdot (-2c^5d)^7 =$
 a) $-2c^{11}d^{11}$ b) $-128c^{13}d^{17}$ c) $-128c^{210}d^{168}$ d) $-128c^{41}d^{31}$
 e) $-2c^{41}d^{31}$

31. The domain of the function $f(x) = \frac{x(x^2-3x-10)}{x^2-25}$ is
 a) $\{x \mid x \neq -5\}$ b) $\{x \mid x \neq 0, -2 \text{ or } 5\}$ c) $\{x \mid x \neq \pm 5\}$
 d) $\{x \mid x \neq 0, -2 \text{ or } \pm 5\}$ e) all real numbers

32. Which of the following is NOT a root of the polynomial $x^4 - 8x^3 - x^2 + 68x + 60$?
- a) 6 b) 3 c) -1 d) -2 e) 5

33. $\log_c 8 = b$ means
- a) $b^c = 8$ b) $c^8 = b$ c) $c^b = 8$ d) $b^8 = c$ e) $8^b = c$

34. $\frac{\sqrt[3]{375x^9y^2z}}{\sqrt[3]{3x^2y^5}} =$
- a) $5x^2y^3\sqrt{xz}$ b) $\frac{5x^3\sqrt[3]{z}}{y^3}$ c) $\frac{x^2y^3\sqrt[3]{z}}{5}$ d) $\frac{5x^2\sqrt[3]{x}}{y}$
- e) $\frac{5x^2\sqrt[3]{xz}}{y}$

35. Lines l_1 and l_2 are parallel. Line l_3 is perpendicular to l_2 . Which of the following is NOT true?
- a) Line l_3 is perpendicular to l_1 .
 b) If line l_4 is perpendicular to l_3 , then l_4 is parallel to l_1 .
 c) If line l_4 is parallel to line l_3 , then l_4 is parallel to l_1 .
 d) Line l_1 intersects l_3 .
 e) If line l_4 is not perpendicular to line l_3 , then l_4 intersects l_2 .

36. In the figure at the right, if the length of AC is 12, the length of DE is 9, the length of BC is 20, and segments DE and AC are parallel, what is the length of EC ?
- a) 5 b) 15 c) 8
 d) 4 e) 7

