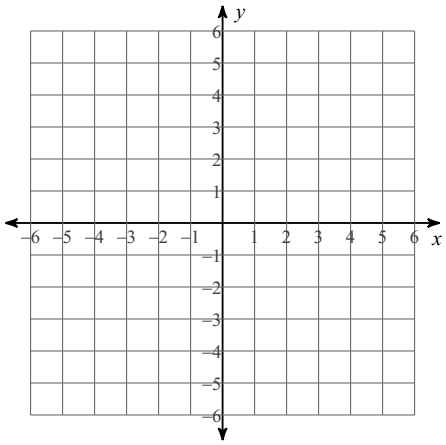
AP Calculus AB Name_____

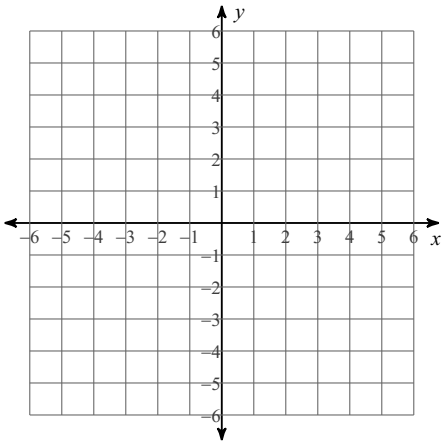
2025 Summer Packet - 1

Sketch the graph of each line.

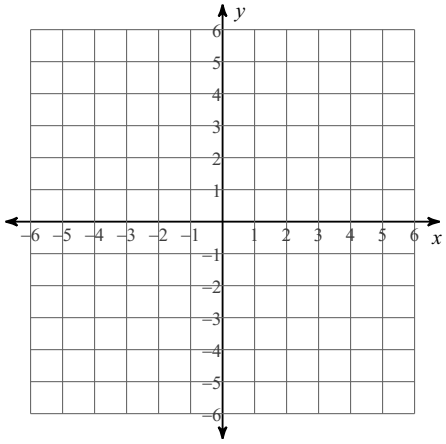
1) $5y + x - 15 = 0$



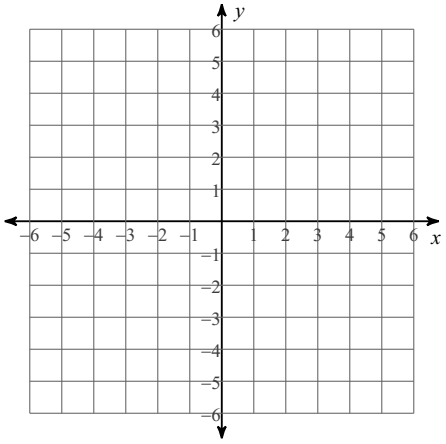
2) $0 = 6x - y - 2$



3) $4y + 20 = 7x$



4) $\frac{1}{2}y = x + 2$



Write the slope-intercept form of the equation of the line described.

5) through: $(3, 3)$, parallel to $y = \frac{5}{3}x - 4$

6) through: $(1, 1)$, parallel to $y = 2x + 4$

7) through: $(-1, 2)$, parallel to $y = -x - 4$

8) through: $(0, 4)$, parallel to $y = -x + 2$

Write the standard form of the equation of the line described.

9) through: $(3, 4)$, perp. to $y = -\frac{1}{2}x - 4$

10) through: $(4, -3)$, perp. to $x = 0$

11) through: $(0, 2)$, perp. to $y = \frac{5}{2}x - 2$

12) through: $(2, 2)$, perp. to $y = -\frac{2}{3}x + 4$

Factor each completely.

13) $6n^3 - 29n^2 + 20n$

14) $9x^2 + 15x - 50$

15) $18m^2 + 68m - 16$

16) $9a^3 - 30a^2$

17) $10x^2 + 7x - 6$

18) $9k^3 - 83k^2 + 18k$

19) $9a^3 - 3a^2b - 2b^2a$

20) $8yx^2 - 6y^2x$

21) $36m^3 + 356m^2n + 288n^2m$

22) $9x^2 - 27xy$

23) $9u^2 + 65uv - 56v^2$

24) $10x^2 + 59xy - 6y^2$

25) $4 + 500a^3$

26) $24a^3 - 375$

27) $500a^3 - 864$

28) $2u^3 + 432$

Solve each equation by completing the square.

29) $r^2 - 8r - 56 = -8$

30) $n^2 + 10n - 50 = 6$

31) $n^2 - 4n - 77 = -9$

32) $a^2 + 10a + 27 = 6$

Solve each equation by factoring.

33) $14n^2 - 49n = -21$

34) $4r^2 - 15 = -17r$

35) $49x^2 = -140x + 224$

36) $15x^2 + 2 = 11x$

Solve each equation with the quadratic formula.

37) $2b^2 + 11 = -9b$

38) $3n^2 = 7$

39) $3x^2 + 5x = 22$

40) $11p^2 + 7p = -2$

Divide using synthetic division.

41) $(4r^3 - 23r^2 - 81r + 81) \div (r - 8)$

42) $(2p^3 - 21p^2 + 43p + 50) \div (p - 7)$

Divide using long division.

43) $(9x^3 - 58x^2 - 12x + 16) \div (9x - 4)$

44) $(10p^3 + 77p^2 + 19p - 21) \div (10p + 7)$

Simplify each expression.

45) $\dfrac{8v}{5v-60} \cdot \dfrac{5v-90}{8v}$

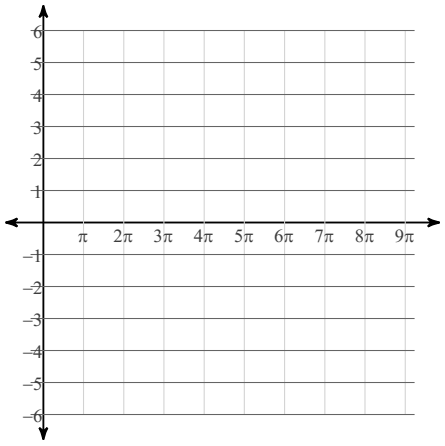
46) $\dfrac{18a+342}{a-7} \cdot \dfrac{1}{a+19}$

47) $\dfrac{1}{6x+42} \cdot \dfrac{5x^2+95x}{5x}$

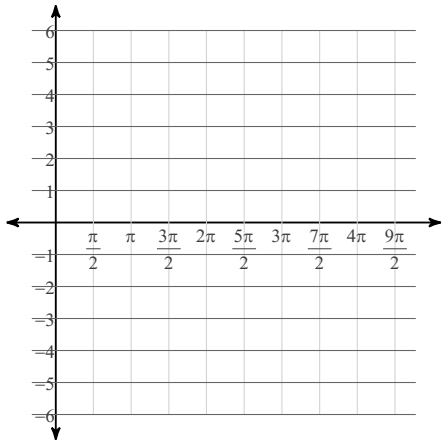
48) $\dfrac{1}{10b} \cdot \dfrac{9b^2+171b}{b+19}$

Graph each function using radians.

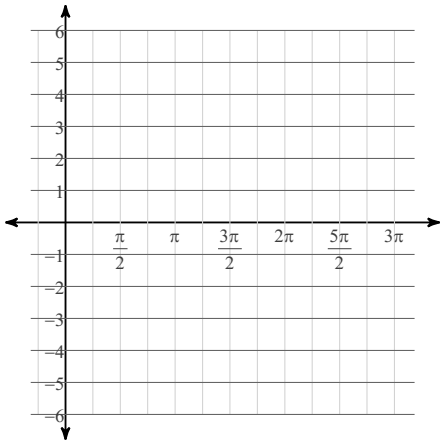
49) $y = \sec \dfrac{\theta}{3}$



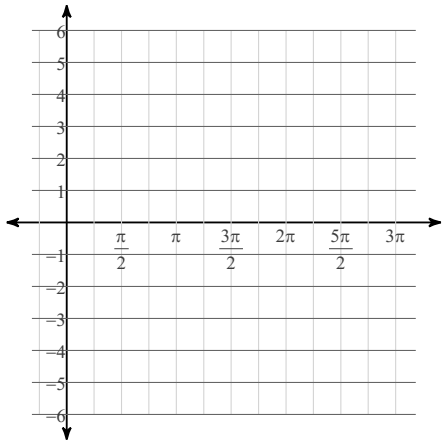
50) $y = 2\cot \dfrac{\theta}{3}$



51) $y = 3\tan\dfrac{\theta}{2}$

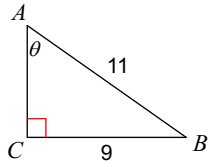


52) $y = \dfrac{1}{2} \cdot \csc\theta$

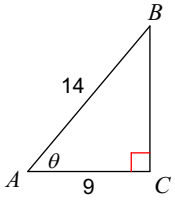


Find the measure of each angle indicated. Round to the nearest tenth.

53)

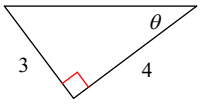


54)

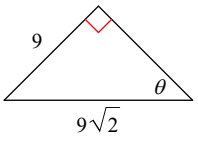


Find the value of the trig function indicated.

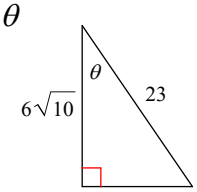
55) $\sin\theta$



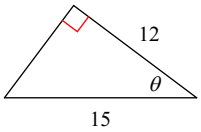
56) $\csc\theta$



57) tan θ



58) tan θ



59) Find sin θ if csc $\theta = \frac{5}{3}$

60) Find csc θ if sec $\theta = \frac{5}{3}$

61) Find tan θ if cos $\theta = \frac{3\sqrt{13}}{13}$

62) Find csc θ if cos $\theta = \frac{2\sqrt{5}}{5}$