

Find the distance between the points $(1, -3)$ and $(-2, -9)$. Write your final answer using radicals.

SCORE: ____ / 6 PTS

$$\begin{aligned} & \sqrt{(-2-1)^2 + (-9-(-3))^2} = \sqrt{45} \\ & = \sqrt{(-3)^2 + (-6)^2} = 3\sqrt{5} \\ & = \sqrt{9+36} \end{aligned}$$

Divide. Rationalize the denominator and simplify.

SCORE: ____ / 6 PTS

$$\frac{\sqrt{21}}{\sqrt{56x}} = \frac{\sqrt{7}\sqrt{3}}{\sqrt{7}\sqrt{8y}} = \frac{\sqrt{3}}{\sqrt{8y}} = \frac{\sqrt{3}}{2\sqrt{2y}} \cdot \frac{\sqrt{2y}}{\sqrt{2y}} = \frac{\sqrt{6y}}{4y}$$

Translate the following sentence into an absolute value equation or inequality.

SCORE: ____ / 6 PTS

"x is at least 9 away from 5"

DISTANCE BETWEEN X AND 5 IS GREATER THAN OR EQUAL TO 9

$$|x-5| \geq 9$$

If $f(x) = 2x^2 - 6x - 5$, find $f(a-3)$.

SCORE: ____ / 8 PTS

$$\begin{aligned} & 2(a-3)^2 - 6(a-3) - 5 \\ & = 2(a^2 - 6a + 9) - 6a + 18 - 5 \\ & = 2a^2 - 12a + 18 - 6a + 18 - 5 \\ & = 2a^2 - 18a + 31 \end{aligned}$$

The equation $5 - |11 - 4x| = 2$ has two solutions. One solution is $x = 2$. Find the other solution.

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Check your answer.

$$-|11 - 4x| = -3$$

$$|11 - 4x| = 3$$

$$11 - 4x = 3 \text{ or } 11 - 4x = -3$$

$$-4x = -8 \text{ or } -4x = -14$$

$$x = 2 \text{ or }$$

$$x = \boxed{\frac{7}{2}}$$

$$5 - |11 - 14|$$

$$= 5 - |-3|$$

$$= 5 - 3$$

$$= 2 \checkmark$$

Solve the equation $13 - 4\sqrt{1-h} = 5$ using algebra. Check your answer(s).

SCORE: ____ / 8 PTS

$$-4\sqrt{1-h} = -8$$

$$\sqrt{1-h} = 2$$

$$1-h = 4$$

$$-h = 3$$

$$h = \boxed{-3}$$

$$13 - 4\sqrt{1-3}$$

$$= 13 - 4\sqrt{4}$$

$$= 13 - 4(2)$$

$$= 13 - 8$$

$$= 5 \checkmark$$

Solve the equation $m - \sqrt{16-3m} = 6$ using algebra. Check your answer(s).

SCORE: ____ / 12 PTS

$$-\sqrt{16-3m} = 6-m$$

$$16-3m = (6-m)^2$$

$$16-3m = m^2-12m+36$$

$$0 = m^2-9m+20$$

$$0 = (m-4)(m-5)$$

$$m = 4, 5$$

NO SOLUTION

CHECK:

$$m=4 \quad 4 - \sqrt{16-12}$$

$$= 4 - \sqrt{4}$$

$$= 4 - 2$$

$$= 2 \times$$

$$m=5 \quad 5 - \sqrt{16-15}$$

$$= 5 - \sqrt{1}$$

$$= 5 - 1$$

$$= 4 \times$$

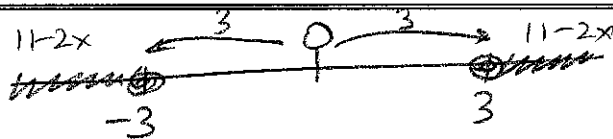
Find the equation of the circle with center $(25, -1)$ and radius 4.

SCORE: ____ / 6 PTS

$$(x-25)^2 + (y-(-1))^2 = 4^2$$

$$(x-25)^2 + (y+1)^2 = 16$$

Solve $|11 - 2x| \geq 3$.



SCORE: ____ / 10 PTS

$$\begin{aligned} 11 - 2x &\leq -3 \text{ or } 11 - 2x \geq 3 \\ -2x &\leq -14 \text{ or } -2x \geq -8 \\ x &\geq 7 \text{ or } x \leq 4 \end{aligned}$$

Write using fractional and/or negative exponents (where applicable).

SCORE: ____ / 8 PTS

[a] $(\sqrt[3]{p})^8 = p^{\frac{8}{3}}$

[b] $\sqrt{b^9} = b^{\frac{9}{2}}$

[c] $\frac{1}{\sqrt[6]{n^{24}}} = \frac{1}{n^{\frac{24}{6}}} = \frac{1}{n^4} = n^{-4}$

Simplify $\sqrt{504}$.

SCORE: ____ / 6 PTS

$$\begin{array}{r} 2 \overline{) 504} \\ 2 \overline{) 252} \\ 2 \overline{) 126} \\ 3 \overline{) 63} \\ 3 \overline{) 21} \\ 7 \overline{) 7} \\ 1 \end{array}$$

$$\begin{aligned} 2 \cdot 3 \sqrt{2 \cdot 7} \\ 6 \sqrt{14} \end{aligned}$$

Simplify $\sqrt{56r^9a^{16}v^{11}}$. Write your final answer using radicals.

SCORE: ____ / 6 PTS

$$2r^4a^8v^5\sqrt{14rv}$$

Find the center and radius of the circle $x^2 + y^2 - 10x + 18y + 42 = 0$.

SCORE: ____ / 8 PTS

$$x^2 - 10x + 25 + y^2 + 18y + 81 = -42 + 25 + 81$$

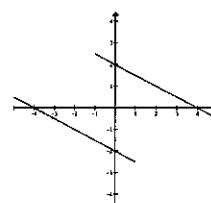
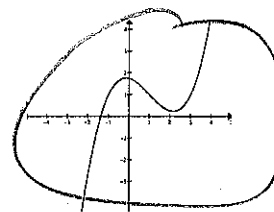
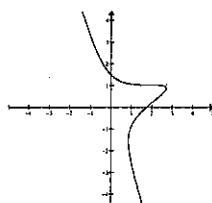
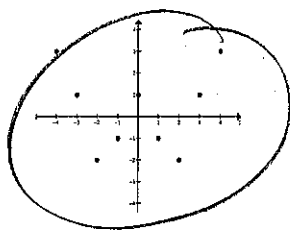
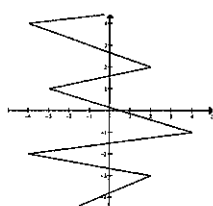
$$(x - 5)^2 + (y + 9)^2 = 64$$

CENTER (5, -9)

RADIUS 8

Circle the **two** graphs below that represent functions.

SCORE: ____ / 6 PTS



Perform the indicated operations and simplify. Write your final answers using radicals.

SCORE: ____ / 14 PTS

$$\begin{aligned} \text{[a]} \quad & \sqrt{6g^{11}} \sqrt{21g^9} \\ &= \sqrt{126g^{20}} \\ &= 3g^{10}\sqrt{14} \end{aligned}$$

$$\begin{aligned} \text{[b]} \quad & (\sqrt{5} + 4\sqrt{2})(3\sqrt{6} - \sqrt{15}) \\ &= 3\sqrt{30} - \sqrt{75} + 12\sqrt{12} - 4\sqrt{30} \\ &= 3\sqrt{30} - 5\sqrt{3} + 12(2\sqrt{3}) - 4\sqrt{30} \\ &= 3\sqrt{30} - 5\sqrt{3} + 24\sqrt{3} - 4\sqrt{30} \\ &= 19\sqrt{3} - \sqrt{30} \end{aligned}$$

Perform the indicated operations and simplify. Write your final answers using fractional exponents.

SCORE: ____ / 10 PTS

$$\begin{aligned} \text{[a]} \quad & \frac{\sqrt{w^3}}{\sqrt[6]{w}} \\ &= \frac{w^{\frac{3}{2}}}{w^{\frac{1}{6}}} \\ &= w^{\frac{3}{2} - \frac{1}{6}} \\ &= w^{\frac{8}{6}} = w^{\frac{4}{3}} \end{aligned}$$

$$\begin{aligned} \text{[b]} \quad & k^6 k^{\frac{3}{8}} \\ &= k^{6 + \frac{3}{8}} \\ &= k^{\frac{51}{8}} \end{aligned}$$

Rationalize the denominator and simplify.

SCORE: ____ / 12 PTS

$$\begin{aligned} \text{[a]} \quad & \frac{14}{5\sqrt{21}} \cdot \frac{\sqrt{21}}{\sqrt{21}} \\ &= \frac{14\sqrt{21}}{5 \cdot 21} \\ &= \frac{2\sqrt{21}}{15} \end{aligned}$$

$$\begin{aligned} \text{[b]} \quad & \frac{15}{7+\sqrt{13}} \cdot \frac{7-\sqrt{13}}{7-\sqrt{13}} \\ &= \frac{15(7-\sqrt{13})}{49-13} \\ &= \frac{15(7-\sqrt{13})}{36} \\ &= \frac{5(7-\sqrt{13})}{12} \end{aligned}$$