If $f(x) = 2x^2 - 5x - 6$, find $f(a-4)$. **SCORE: ____ / 8 PTS**

$2(a-4)^2 - 5(a-4) - 6$

$= 2(a^2 - 8a + 16) - 5a + 20 - 6$

$= 2a^2 - 16a + 32 - 5a + 20 - 6$

$= 2a^2 - 21a + 46$

Translate the following sentence into an absolute value equation or inequality. **SCORE: ____ / 6 PTS**

"x is at most 8 away from 4"

DISTANCE BETWEEN X AND 4 IS LESS THAN OR EQUAL TO 8

$|x - 4| \leq 8$

Divide. Rationalize the denominator and simplify. **SCORE: ____ / 6 PTS**

$$\frac{\sqrt{56}}{\sqrt{21y}} = \frac{\sqrt{7}\sqrt{8}}{\sqrt{7}\sqrt{3y}} = \frac{\sqrt{8}}{\sqrt{3y}} \cdot \frac{\sqrt{3y}}{\sqrt{3y}} = \frac{\sqrt{24y}}{3y} = \frac{2\sqrt{6y}}{3y}$$

Find the distance between the points $(-6, -3)$ and $(1, -4)$. **Write your final answer using radicals.** **SCORE: ____ / 6 PTS**

$\sqrt{(1 - -6)^2 + (-4 - -3)^2}$

$= \sqrt{7^2 + (-1)^2}$

$= \sqrt{49 + 1}$

$= \sqrt{50}$

$= 5\sqrt{2}$

Rationalize the denominator and simplify. **SCORE: _____ / 12 PTS**

[a] $\frac{10}{7\sqrt{15}} \cdot \frac{\sqrt{15}}{\sqrt{15}}$

$= \frac{10\sqrt{15}}{7 \cdot 15}$

$= \frac{2\sqrt{15}}{21}$

[b] $\frac{33}{6+\sqrt{14}} \cdot \frac{6-\sqrt{14}}{6-\sqrt{14}}$

$= \frac{33(6-\sqrt{14})}{36-14}$

$= \frac{33(6-\sqrt{14})}{22}$

$= \frac{3(6-\sqrt{14})}{2}$

Perform the indicated operations and simplify. **Write your final answers using fractional exponents.** **SCORE: _____ / 10 PTS**

[a] $\frac{\sqrt{w^5}}{\sqrt[6]{w}}$

$= \frac{w^{\frac{5}{2}}}{w^{\frac{1}{6}}}$

$= w^{\frac{5}{2}-\frac{1}{6}}$

$= w^{\frac{14}{6}} = w^{\frac{7}{3}}$

[b] $k^8 k^{\frac{5}{6}}$

$= k^{8+\frac{5}{6}}$

$= k^{\frac{53}{6}}$

Perform the indicated operations and simplify. **Write your final answers using radicals.** **SCORE: _____ / 14 PTS**

[a] $\sqrt{10g^5}\sqrt{15g^{11}}$

$= \sqrt{150g^{16}}$

$= 5g^8\sqrt{6}$

[b] $(4\sqrt{5}+\sqrt{3})(\sqrt{6}-2\sqrt{10})$

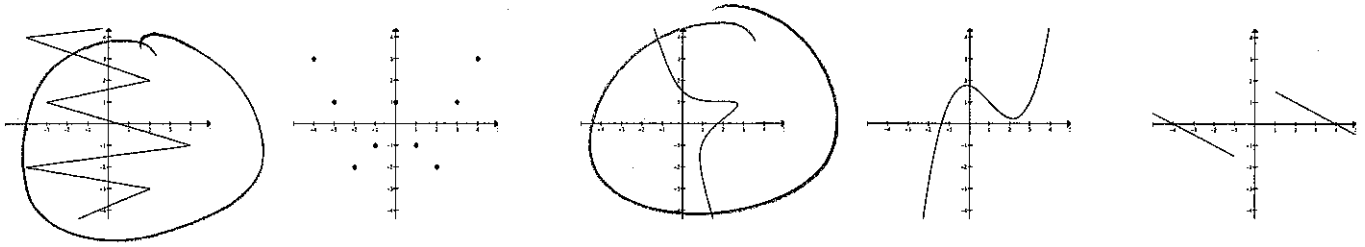
$= 4\sqrt{30} - 8\sqrt{50} + \sqrt{18} - 2\sqrt{30}$

$= 4\sqrt{30} - 8(5\sqrt{2}) + 3\sqrt{2} - 2\sqrt{30}$

$= 4\sqrt{30} - 40\sqrt{2} + 3\sqrt{2} - 2\sqrt{30}$

$= 2\sqrt{30} - 37\sqrt{2}$

Circle the **two** graphs below that **DO NOT** represent functions. **SCORE: _____ / 6 PTS**



Find the equation of the circle with center $(-4, 16)$ and radius 9.

SCORE: ____ / 6 PTS

$(x--4)^2+(y-16)^2=9^2$

$(x+4)^2+(y-16)^2=81$

Solve the equation $m-\sqrt{2m-5}=4$ using algebra. **Check your answer(s).**

SCORE: ____ / 12 PTS

$-\sqrt{2m-5}=4-m$

$2m-5=(4-m)^2$

$2m-5=m^2-8m+16$

$0=m^2-10m+21$

$0=(m-3)(m-7)$

$m=3, \boxed{7}$

CHECK:

$m=3$ $\quad 3-\sqrt{6-5}$

$=3-\sqrt{1}$

$=3-1$

$=2$ X

$m=7$ $\quad 7-\sqrt{14-5}$

$=7-\sqrt{9}$

$=7-3$

$=4$ ✓

Solve the equation $11-3\sqrt{2-h}=5$ using algebra. **Check your answer(s).**

SCORE: ____ / 8 PTS

$-3\sqrt{2-h}=-6$

$\sqrt{2-h}=2$

$2-h=4$

$-h=2$

$h=\boxed{-2}$

$11-3\sqrt{2--2}$

$=11-3\sqrt{4}$

$=11-3(2)$

$=11-6$

$=5$ ✓

The equation $7-|11-3x|=2$ has two solutions. One solution is $x=2$. Find the other solution.

SCORE: ____ / 8 PTS

Check your answer.

$-|11-3x|=-5$

$|11-3x|=5$

$11-3x=5$ OR $11-3x=-5$

$-3x=-6$ $\quad -3x=-16$

$x=2$ $\quad x=\boxed{\frac{16}{3}}$

$7-|11-16|$

$=7-|-5|$

$=7-5$

$=2$ ✓

Find the center and radius of the circle $x^2 + y^2 - 14x + 12y + 4 = 0$. **SCORE: ____ / 8 PTS**

$x^2 - 14x + 49 + y^2 + 12y + 36 = -4 + 49 + 36$

$(x-7)^2 + (y+6)^2 = 81$

CENTER $(7, -6)$

RADIUS 9

Simplify $\sqrt{60r^{16}a^{13}v^9}$. **Write your final answer using radicals.** **SCORE: ____ / 6 PTS**

$2r^8a^6v^4\sqrt{15av}$

Simplify $\sqrt{588}$. **SCORE: ____ / 6 PTS**

$2 \mid 588$
$2 \mid 294$
$3 \mid 147$
$7 \mid 49$
$7 \mid 7$
1

$2 \cdot 7\sqrt{3}$

$= 14\sqrt{3}$

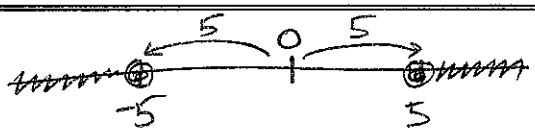
Write using fractional and/or negative exponents (where applicable). **SCORE: ____ / 8 PTS**

[a] $(\sqrt[6]{n})^{24} = n^{\frac{24}{6}} = n^4$

[b] $\sqrt[5]{b^{13}} = b^{\frac{13}{5}}$

[c] $\frac{1}{\sqrt{p^9}} = \frac{1}{p^{\frac{9}{2}}} = p^{-\frac{9}{2}}$

Solve $|7 - 4x| \geq 5$. **SCORE: ____ / 10 PTS**



$7 - 4x \leq -5$ OR $7 - 4x \geq 5$

$-4x \leq -12$ OR $-4x \geq -2$

$x \geq 3$ OR $x \leq \frac{1}{2}$