## YOU MUST SHOW LOGICAL, NEAT AND ORGANIZED WORK TO EARN FULL CREDIT

## PUT A BOX AROUND YOUR FINAL ANSWER

Write  $1.97 \times 10^{-5}$  in standard notation.

SCORE: \_\_\_/ 4 POINTS



Write 81,700,000 in scientific notation.

SCORE: \_\_\_/ 4 POINTS

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

[a] 
$$\left(\sqrt[4]{n}\right)^5 = \left[ \begin{array}{c} \sqrt{\frac{5}{4}} \end{array} \right]$$

[b] 
$$\sqrt[7]{b^{21}} = \sqrt[2]{\frac{21}{7}} = \sqrt[3]{3}$$

$$\frac{1}{\sqrt{p^9}} = \sqrt{-\frac{\frac{q}{2}}{2}}$$

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

SCORE: \_\_\_ / 20 POINTS

[a] 
$$k^5 k^{\frac{3}{4}} = \sqrt{\frac{5+\frac{3}{4}}{4}}$$
  
=  $\sqrt{\frac{20+3}{4}}$   
=  $\sqrt{\frac{23}{4}}$ 

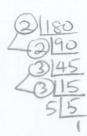
[b] 
$$\frac{w^{\frac{4}{5}}}{w^{\frac{2}{3}}} = \omega^{\frac{4}{5}} - \frac{2}{3}$$

$$= \omega^{\frac{12-13}{15}}$$

$$= \omega^{\frac{2}{15}}$$

[c]

[c] 
$$\frac{\sqrt[4]{s}}{\sqrt[10]{s}} = \frac{S^{\frac{1}{4}}}{S^{\frac{1}{6}}}$$
  
=  $S^{\frac{1}{4} - \frac{1}{6}}$   
=  $S^{\frac{5-2}{20}}$   
=  $S^{\frac{2}{20}}$ 



Find the equation of the circle with center (3, -7) and radius 9.

$$(x-3)^2 + (y+7)^2 = 81$$

SCORE: \_\_\_/6 POINTS

Find the distance between the points (7,-8) and (-1,-4). Write your final answer in simplest radical form. SCORE: \_\_\_/8 POINTS

Solve the equation  $14 - 3\sqrt{g} = 2$  using algebra. Check your answer(s).

SCORE: \_\_\_ / 10 POINTS

$$-3\sqrt{g}^{2}=-12$$
 $\sqrt{g}^{2}=4$ 
 $\sqrt{g}^{2}=4^{2}$ 
 $\sqrt{g}^{2}=16$ 

CHECK: 
$$14-3\sqrt{16}$$
  
=  $14-3(4)$   
=  $14-12$   
=  $2$  YES

Rationalize the denominator and simplify. Write your final answers using radicals.

[a] 
$$\frac{8}{3\sqrt{10}} = \frac{8}{3\sqrt{10}} \cdot \frac{\sqrt{10}}{\sqrt{10}}$$
  
=  $\frac{48\sqrt{10}}{38}$  | 5  
=  $\frac{4\sqrt{10}}{15}$ 

[b] 
$$\frac{10}{4-\sqrt{11}} = \frac{10}{4-\sqrt{11}} \cdot \frac{4+\sqrt{11}}{4+\sqrt{11}}$$
  
=  $\frac{10(4+\sqrt{11})}{16-11}$   
=  $\frac{10(4+\sqrt{11})}{8}$   
=  $\frac{2(4+\sqrt{11})}{8}$ 

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

[a] 
$$\sqrt{48} + \sqrt{75}$$
  
=  $4\sqrt{3}' + 5\sqrt{3}'$   
=  $9\sqrt{3}'$ 

[b] 
$$(2\sqrt{5} - \sqrt{6})(3\sqrt{3} + \sqrt{10})$$
  
=  $6\sqrt{15} + 2\sqrt{50} - 3\sqrt{18} - \sqrt{60}$   
=  $6\sqrt{15} + 10\sqrt{2} - 9\sqrt{2} - 2\sqrt{15}$   
=  $4\sqrt{15} + \sqrt{2}$ 

$$\frac{\sqrt{3}}{\sqrt{54}} = \sqrt{\frac{3}{54}}$$

$$= \sqrt{\frac{3}{54}}$$

Find the center and radius of the circle  $x^2 + y^2 - 10x + 12y + 12 = 0$ .

$$x^2-10x+25+y^2+12y+36=-12+25+36$$
  
 $(x-5)^2+(y+6)^2=49$   
CENTER:  $(5,-6)$   
RADIUS:  $7$ 

Solve the equation  $m - \sqrt{2m-1} = 2$  using algebra. Check your answer(s).

SCORE: \_\_\_ / 14 POINTS

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

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

$$2m-1 = 4-4m+m^2$$

$$0 = m^2-6m+5$$

$$0 = (m-1)(m-5)$$

$$m=1 or m=5$$

$$T = 2 - m$$
 $T = 2 - m$ 
 $T = 1 - \sqrt{2(1) - 1}$ 
 $T = 1 - \sqrt{17}$ 
 $T =$