MATH-131 TEST 4 (up to 7.3)
SAMPLE 100 points

NAME:_____

Show all work. On problems where a check is *required*, you must show your check.

CIRCLE T FOR TRUE, F FOR FALSE. (2 POINTS EACH)

T F (1) $3x^{\frac{1}{4}} = 3\sqrt[4]{x}$

T F (2) $(4y)^{\frac{1}{5}} = \sqrt[5]{4y}$

T F (3) $(a-b)^{\frac{1}{3}} = a^{\frac{1}{3}} - b^{\frac{1}{3}}$

T F (4) $\sqrt{81} = \pm 9$.

T F (5) $\sqrt{x^2 + y^2}$ = x + y

T F (5.1) Simplify $\frac{3+\sqrt{-36}}{6} = 1/2 + i$

T F (5.2) $(5+2i)(4-i)$ = 22 -3i

Fill in the blank with the most appropriate, simplified answer. (2 points each)

(6) $(-64)^{2/3}$ = _____

(7) $\left(\frac{16}{25}\right)^{-1/2}$ = _____

(8) $\sqrt[3]{3}\ \sqrt[4]{2}$ = _____

(9) $\left(5+\sqrt{y}\right)^2$ = _____

(10) $\sqrt[3]{400}$ = _____

(11) $\frac{\sqrt{6}}{5\sqrt{2}}$ = _____

(12) $\left(-3\sqrt{5}\right)^2$ = _____

(13) $\sqrt[4]{2a^5} + 5a\sqrt[4]{2a}$ = _____

(14) $(-16)^{3/2}$ = _____

(15) $\sqrt{27} - \sqrt{12} + 2\sqrt{75}$ = _____

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(16) Simplify: (2 points each)

(a) $\frac{2+\sqrt{s}}{3-\sqrt{s}}$

(b) $\frac{4}{\sqrt[3]{9y^5}}$

(17) Solve. (5 points each)

(a) $\sqrt{2x+1}+\sqrt{x+4}=3$

(b) $\sqrt[3]{4x-2}=8$

(18) Factor completely: (2 points each)

(a) $12x^{\frac{-3}{4}}-8x^{\frac{1}{4}}$

(b) $5(4x+3)^{-1}-4(5x+1)(4x+3)^{-2}$

(19) Use the graph of f(x) to answer the following questions: (2 points each)

Solve using the method of completing the square. (No credit given for using another method)

$-3x^2-2x+4=0$

(21) For this problem only...do NOT assume all variables represent positive numbers. Simplify. (3 points each)

(a) $\sqrt[4]{32a^{12}b^{13}}$ = _____

(b) $\sqrt{63x^5y^9z^{10}}$ = _____

(22) Simplify. Assume all variables represent positive real numbers. (3 points each)

(a) $\sqrt[4]{8x^6y^2}\ \sqrt[4]{2x^7y^6}$

(b) $\sqrt[3]{\dfrac{32x^{13}y^3}{4xy^6}}$

(c) $\dfrac{\sqrt{4x^5y}}{\sqrt{100x^{-3}y^2}}$

(d) $\left(8a^6b\right)^{2/3}\left(a^2b^{3/2}\right)^2$

(e) $\left(\dfrac{2x^{-1/5}y^{2/3}}{8x^{-1/4}y^{1/3}}\right)^2$

(f) $\sqrt[5]{-64x^{34}y^{12}z^{20}}$

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(23) For the function $f(x)=\sqrt{x-3}$,

a) Find the domain of f._____ (2 points)

b) Find f(x+h) = _____ (2 points)

c)) graph f(x) . Show scale and label two points on graph (4 points)

(24) Solve each of the following and simplify your answer:

(a) $5x^2=1-3x$

(b) $x^2+4x+9=0$

(c) $\frac{2}{x^2}-\frac{14}{x}+24=0$

(d) $(x-3)(x+1)=2$

(e) $2x^{-2}+5x^{-1}-3=0$

(f) $(1-3x)^2=-4$