FCM – Chapter #7 – Rationals, Radicals, & Complex Numbers **Name: _____**
Review for Test **Date: _____ Per: _____**

SHOW ALL WORK ON A SEPARATE SHEET OF PAPER!!!
No negative exponents or decimal answers on any problem.

Evaluate the root. Simplify where possible.

1) $\sqrt[3]{-8}$ **2)** $\sqrt[5]{32a^5b^{10}}$ **3)** $\sqrt{\dfrac{x^{12}}{36y^2}}$ **4)** $\sqrt[3]{(-27)^3}$

5) *Let* $f(x)=\sqrt{x}+3$

a)Find $f(0)$ *and* $f(9)$

b)Find the domain of $f(x)$

c)Graph $f(x)$

6) *Let* $g(x)=\sqrt[3]{x-3}$

a)Find $g(11)$ *and* $g(20)$

b)Find the domain of $g(x)$

c)Graph $g(x)$

Evaluate each expression. Simplify where possible.

7) $\left(\dfrac{1}{81}\right)^{1/4}$ **8)** $-9^{3/2}$ **9)** $\left(\dfrac{8}{27}\right)^{-2/3}$ **10)** $\left(a^{1/2}a^{-2}\right)^3$

11) $\left(\dfrac{b^{3/4}}{a^{-1/2}}\right)^8$ **12)** $x^{1/2}\left(x^{1/2}+x^{3/2}\right)$ **13)** $\dfrac{\sqrt{44x^3}}{\sqrt{11x}}$ **14)** $\sqrt[3]{162}$

15) $\sqrt{36x^7}$ **16)** $\sqrt{\dfrac{p^{17}}{121}}$ **17)** $\sqrt[4]{\dfrac{xy^6}{81}}$

18) The formula for the area A of a circle of radius r is $A=\pi r^2$
Find the radius of a circle whose area is 25 square meters.

Add or subtract as indicated. Simplify where possible.

19) $\sqrt{20}+\sqrt{45}-7\sqrt{5}$ **20)** $2\sqrt{50}-3\sqrt{125}+\sqrt{98}$

Multiply the following radical expressions. Simplify where possible.

21) $\sqrt{3}\left(\sqrt{27}-\sqrt{3}\right)$

22) $\left(\sqrt{5}-5\right)\left(2\sqrt{5}+2\right)$

23) $\left(\sqrt{a}+3\right)\left(\sqrt{a}-3\right)$

24) $\left(\sqrt[3]{5x}+9\right)\left(\sqrt[3]{5x}-9\right)$

Rationalize the denominator. Simplify where possible.

25) $\dfrac{3}{\sqrt{7}}$

26) $\dfrac{5}{\sqrt[3]{4}}$

27) $\sqrt{\dfrac{15x^6y^7}{z}}$

28) $\dfrac{3}{\sqrt{y}-2}$

29) $\dfrac{4}{\sqrt{x}+5}$

30) $\dfrac{x+1}{\sqrt{5}+3}$

31) $\sqrt{y-7}=5$

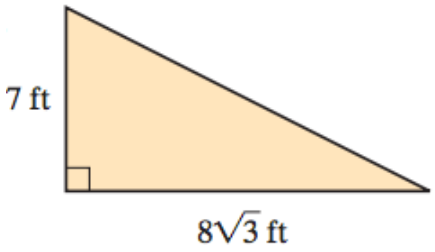
Solve each equation. Simplify where possible.

32) $\sqrt{2x}+10=4$

33) $\sqrt[3]{2x-6}=4$

34) $2x-5\sqrt{x}=3$

35) Find the length of the unknown leg of the right triangle



Evaluate each expression. Simplify where possible.

36) $\sqrt{-4}+\sqrt{-16}$

37) $(12-6i)+(3+2i)$

38) $(2i)^6$

39) $-3i(6-4i)$

40) $(2-3i)^2$

41) $\dfrac{2+3i}{2i}$

42) i^{87}

43) i^{-37}