Review 5A

Math 105 Show all of your work.

1. Simplify $\sqrt{28}$.
2. Simplify $\sqrt[3]{16x^4y^5}$.
3. Simplify $\sqrt{\dfrac{1}{16x}}$ so that the denominator is rational.
4. Simplify $81^{-3/4}$.
5. Combine and Simplify $4x^{\frac{1}{2}}x^{\frac{2}{3}}$.
6. Combine and Simplify $\dfrac{x^{\frac{1}{2}}x^{\frac{1}{3}}}{x^{\frac{2}{3}}}$.
7. Simplify $(2x^{\frac{1}{4}}y^{\frac{1}{2}})^3$.
8. Simplify $\dfrac{(25x^2y)^{\frac{1}{2}}}{(2x^{\frac{2}{3}}y^{\frac{1}{2}})^3}$.
9. Change to exponential notation and simplify $\dfrac{\sqrt{\sqrt{x}}}{\sqrt[3]{x^4}}$.
10. Combine and simplify $\sqrt{18x}+\sqrt{50x}-\sqrt{32x}$.
11. Multiply and simplify $(1+\sqrt{2})^2$.
12. Divide, rationalizing the denominator. $\dfrac{\sqrt{3}-1}{4-\sqrt{5}}$.
13. Find the domain of $f(x)=\sqrt{2x+1}$ and find $f(4)$.
14. Simplify $\sqrt{-49}$.
15. Subtract $(5-2i)-(3-2i)$.
16. Write $8i(2+3i)$ in standard form.
17. Multiply and simplify $(1+i)(2+i)$.
18. Multiply and simplify $(\sqrt{8}+i)(\sqrt{2}+i)$.
19. Divide and simplify $\dfrac{1+2i}{5-4i}$.
20. Simplify *(a)* i^{25} and *(b)* i^{1000}.

Answers to problems above: 1. $2\sqrt{7}$ 2. $2xy\sqrt[3]{2xy^2}$ 3. $\frac{\sqrt{x}}{4x}$ 4. $\frac{1}{27}$ 5. $4x^{7/6}$ 6. $x^{1/6}$ 7. $8x^{3/4}y^{3/2}$ 8. $\frac{5}{8xy}$ 9. $\frac{1}{x^{13/12}}$ 10. $4\sqrt{2x}$ 11. $3+2\sqrt{2}$ 12. $(4\sqrt{3}+\sqrt{15}-4-\sqrt{5})/11$ 13. $x\geq -1/2$ and $f(4)=3$ 14. $7i$ 15. 2 16. $-24+16i$ 17. $1+3i$ 18. $3+3i\sqrt{2}$ 19. $-\frac{3}{41}+\frac{14}{41}i$ 20. *(a)* i, *(b)* 1

Review 5B

Math 105 Show all of your work.

1. Simplify $\sqrt[3]{-81}$.
2. Simplify $\sqrt{8x^3y^5}$.
3. Simplify $\sqrt{\dfrac{3}{8x^3}}$ so that the denominator is rational.
4. Simplify $27^{4/3}$.
5. Combine and Simplify $\dfrac{8x^{1/3}}{2x^{1/6}}$.
6. Combine and Simplify $\dfrac{x^{4/3}}{x^{1/2}x^{1/3}}$.
7. Simplify $(4x^2y)^{\frac{1}{2}}$.
8. Simplify $\dfrac{(3xy^{1/2})^2}{(27x^2y^3)^{1/3}}$.
9. Change to exponential notation and simplify $\sqrt[3]{\sqrt{x}}\sqrt{x}$.
10. Combine and simplify $\sqrt{500}+\sqrt{80}-\sqrt{20}$.
11. Multiply and simplify $(\sqrt{3x}-6)(\sqrt{3x}+6)$.
12. Divide, rationalizing the denominator. $\dfrac{1}{\sqrt{3}-\sqrt{2}}$.
13. Find the domain of $f(x)=\sqrt[3]{2-3x}$ and find $f(-3)$.
14. Simplify $-\sqrt{-64}$.
15. Add $(-6-i)+(2-3i)$.
16. Write $i(1+i)$ in standard form.
17. Multiply and simplify $(6-i)(2+3i)$.
18. Multiply and simplify $(1-\sqrt{-5})(1+3\sqrt{-5})$.
19. Divide and simplify $\dfrac{2-i}{5+2i}$.
20. Simplify *(a)* i^{99} and *(b)* $\frac{1}{i}$.

Answers to problems above: 1. $-3\sqrt[3]{3}$ 2. $2xy^2\sqrt{2xy}$ 3. $\frac{\sqrt{6x}}{4x^2}$ 4. 81 5. $4x^{1/6}$ 6. $x^{1/2}$ 7. $2xy^{1/2}$ 8. $3x^{4/3}$ 9. $x^{2/3}$ 10. $12\sqrt{5}$ 11. $3x-36$ 12. $\sqrt{3}+\sqrt{2}$ 13. "all real numbers" and $f(-3)=\sqrt[3]{11}$ 14. $-8i$ 15. $-4-4i$ 16. $-1+i$ 17. $15+16i$ 18. $16+2i\sqrt{5}$ 19. $\frac{8}{29}-\frac{9}{29}i$ 20. *(a)* $-i$, *(b)* $-i$