Test 2.2 Review Name _____

Factor Completely:

1) $9x^2+42x-15$

$3(3x^2+14x-5)$

$3(3x-1)(x+5)$

a·c = −15; 15 × −1; 14; b

$\frac{15}{3}$ $\frac{-1}{3}$

2) $x^3-3x^2-9x+27$

$x^2(x-3)-9(x-3)$

$(x-3)(x^2-9)$

$(x-3)(x-3)(x+3)$

or $(x+3)(x-3)^2$

3) $4x^2-100$

$4(x^2-25)$

$4(x+5)(x-5)$

4) x^4+27x

$x(x^3+27)$

Sum of Cubes a^3+b^3

$(a+b)(a^2-ab+b^2)$

$x(x+3)(x^2-3x+9)$

Simplify the complex expressions.

5) $(10-2i)+(-3-24i)$

$10+-3=7$

$-2i+-24i=-26i$

$7-26i$

6) $(-3+i)(5-7i)$ Dist. Property

$-15+21i+5i-7i^2$ ← $i^2=-1$

$-15+21i+5i+7$

$-8+26i$

7) $6i(-10+3i)$ Dist. Prop.

$-60i+18i^2$ ← $i^2=-1$

$-18-60i$

Rationalize the denominator.

8) $\frac{2\sqrt{5}}{\sqrt{7}}\cdot\frac{\sqrt{7}}{\sqrt{7}}=\frac{2\sqrt{35}}{7}$

9) $\frac{3}{2i}\cdot\frac{-2i}{-2i}$ $\frac{3}{0+2i}\cdot\frac{0-2i}{0-2i}$

$\frac{-6i}{-4i^2}=\frac{-6i}{4}=\frac{-3i}{2}$

10) $\frac{-7}{3-4i}\cdot\frac{3+4i}{3+4i}=\frac{-21-28i}{9+12i-12i-16i^2}$

$\frac{-21-28i}{25}$ or $\frac{-21}{25}-\frac{28}{25}i$

Solve for each.

11) $4(3x-5)(x+4)=0$

$3x-5=0$ or $x+4=0$

$x=\frac{5}{3}$ or $x=-4$

12) Solve: $\frac{1}{3}(x+2)^2-14=0$

$\frac{1}{3}(x+2)^2=14$

$(x+2)^2=42$

$x+2=\pm\sqrt{42}$

$x=-2\pm\sqrt{42}$

13) $-3x^2+33x-81=0$ Divide by -3

$x^2-11x+27=0$

$x=\frac{-(-11)\pm\sqrt{(-11)^2-4(1)(27)}}{2(1)}=\frac{11\pm\sqrt{13}}{2}$

14) $4x^2-3x-19=23+x-2x^2$

$6x^2-4x-42=0$ Divide by 2

$3x^2-2x-21=0$

$(3x+7)(x-3)=0$

$x=\frac{-7}{3}$ $x=3$

-63, 7, -9, -2

$\frac{7}{3}$ $\frac{-9}{3}$

15) $-4(x+3)^2-24=0$

$-4(x+3)^2=24$

$(x+3)^2=-6$

$x+3=\pm\sqrt{6}\,i$

$x=-3\pm\sqrt{6}\,i$

16) $2x^2+21=111$

$2x^2=90$

$x^2=45$

$x=\pm\sqrt{45}=\pm\sqrt{9}\sqrt{5}$

$x=\pm 3\sqrt{5}$