PreCalc
WS: Summer Work Extra Practice

Name Key
Date 9/6/16 Block 1A, 2B

In 1 – 4, factor completely.

1. $x^3 + 13x^2 + 42x$

$x(x^2+13x+42)$
$x(x+6)(x+7)$

2. $5a^2 - 12a - 9$

$(5a+3)(a-3)$

3. $6n^2 - 19n + 8$

$(3n-8)(2n-1)$

4. $24m^3 - 54m$

$6m(4m^2-9)$
$6m(2m+3)(2m-3)$

In 5 – 6, solve by factoring and then sketch.

5. $8a^2 - 64 = -56a$

$8a^2+56a-64=0$
$8(a^2+7a-8)=0$
$(a+8)(a-1)=0$
$\{a=-8, 1\}$

6. $-18 = v^2 + 9v$

$v^2+9v+18=0$
$(v+6)(v+3)=0$
$v=\{-6,-3\}$

In 7 – 10, simplify completely.

7. $8\sqrt{108}$ $48\sqrt{3}$

8. $\sqrt{15}\cdot\sqrt{10}$

$\sqrt{150} = 5\sqrt{6}$

9. $\frac{\sqrt{5}}{4\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{15}}{12}$

10. $\frac{5}{\sqrt{2}-5} \cdot \frac{(\sqrt{2}+5)}{(\sqrt{2}+5)} = \frac{5\sqrt{2}+25}{-23}$

$\frac{-5\sqrt{2}-25}{23}$

In 11 – 12, solve by finding square roots.

11. $9m^2 + 10 = 658$

$9m^2 = 648$
$m^2 = 72$
$m = \pm 6\sqrt{2}$

12. $\frac{1}{3}(x-2)^2 + 3 = 12$

$\frac{1}{3}(x-2)^2 = 9$
$(x-2)^2 = 27$
$x-2 = \pm 3\sqrt{3}$
$x = 2 \pm 3\sqrt{3}$

In 13, evaluate the discriminant and state how many solutions and of what type.

13. $4r^2 - 4r - 3 = -6$

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

$b^2 - 4ac$

$16 - 4(4)(3)$

$16 - 48$

-32

2 imaginary

In 14 – 15, solve using the quadratic formula. Answers should be given in simplest radical form, when necessary.

14. $2x^2 - 9 = 6x + 1$

$2x^2 - 6x - 10 = 0$

$\frac{3 \pm \sqrt{29}}{2}$

$x = \frac{6 \pm \sqrt{36 - 4(2)(-10)}}{4} = \frac{6 \pm \sqrt{116}}{4}$

$\frac{6 \pm 2\sqrt{29}}{4}$

15. $9x^2 - 6x - 3 = 18x - 19$

$9x^2 - 24x + 16 = 0$

$x = \frac{24 \pm \sqrt{24^2 - 4(9)(16)}}{18} = \frac{24}{18} = \frac{4}{3}$

In 16 – 20, perform the indicated operation.

16. $\frac{k^2 + 7k + 6}{4k + 32} \cdot \frac{k^2 + 3k - 40}{k^2 + k - 30}$

$\frac{(k+6)(k+1)}{4(k+8)} \cdot \frac{(k+8)(k-5)}{(k+6)(k-5)}$

$\frac{k+1}{4}$

17. $\frac{5}{6x^3} \div \frac{10}{6x}$

$\frac{5}{6x^3} \cdot \frac{6x}{10}$ 2

$\frac{1}{2x^2}$

18. $\frac{n-6}{n+4} + \frac{4n}{5}$

$\frac{4n^2 + 21n - 30}{5(n+4)}$

$\frac{5(n-6)}{5(n+4)} + \frac{4n(n+4)}{5(n+4)}$

$\frac{5n - 30 + 4n^2 + 16n}{5(n+4)}$

19. $\frac{5}{x-5} - \frac{4}{x+2}$

$\frac{5(x+2) - 4(x-5)}{(x-5)(x+2)} = \frac{x + 30}{(x-5)(x+2)}$

20. $\frac{\frac{u^2}{2} + \frac{1}{u}}{\frac{u-1}{4}}$

$\frac{u^3 + 2}{2u} \cdot \frac{4}{u-1} 2 = \frac{2(u^3+2)}{u(u-1)}$