Name: Solutions Date: Period: **Review**

Unit 9 Review – Factoring

Reviews do **NOT** cover all material from the lessons but will hopefully remind you of key points. To be prepared, you must study all packets from Unit 9.

Factor the following.

1. $t^2 - 9t - 36$

$(t-12)(t+3)$

2. $m^2 - 4$

$(m-2)(m+2)$

3. $4x^2 - 8x$

$4x \quad 4x$

$4x(x-2)$

4. $2p^2 + 3p - 5$

$(2p+5)(p-1)$

5. $-6n^2 - 22n - 12$

$-2 \quad -2 \quad -2$

$-2(3n^2+11n+6)$

$18 \quad 1 \quad 8 \quad 2 \quad 9 \quad 3 \quad 6$

$-2[3n^2+2n+9n+6]$

$-2[n(3n+2)+3(3n+2)]$

$-2(3n+2)(n+3)$

6. $d^3 - d^2 - 20d$

$d \quad d \quad d$

$d(d^2-d-20)$

$d(d-5)(d+4)$

Solve by factoring.

7. $x^2 - 7x - 30 = 0$

$(x-10)(x+3)=0$

$x-10=0 \qquad x+3=0$

$x=10 \qquad x=-3$

8. $0 = 2h^2 + 14h + 24$

$2 \quad 2 \quad 2$

$0=2(h^2+7h+12)$

$0=2(h+3)(h+4)$

$0=h+3 \qquad 0=h+4$

$h=-3 \qquad h=-4$

9. $3g^2 - 10g = 8$

$8 \quad 1 \quad 8 \quad 2 \quad 4$

$3g^2-10g-8=0$

$(3g+2)(g-4)=0$

$3g+2=0 \qquad g-4=0$

$3g=-2$

$g=-\frac{2}{3} \qquad g=4$

10. $0 = 16b^3 - 36b$

$4b \quad 4b$

$0=4b(4b^2-9)$

Difference of squares!

$0=4b(2b-3)(2b+3)$

$4b=0 \quad 2b-3=0 \quad 2b+3=0$

$b=0 \quad b=\frac{3}{2} \quad b=-\frac{3}{2}$

11. $x^2 + 8x + 2 = -10$

$x^2+8x+12=0$

$(x+6)(x+2)=0$

$x+6=0 \quad x+2=0$

$x=-6 \quad x=-2$

12. $5m^2 + 20m = 0$

$\frac{5m}{5m} \quad \frac{5m}{5m}$

$5m(m+4)=0$

$5m=0 \quad m+4=0$

$m=0 \quad m=-4$

Find the y- and x-intercepts and SKETCH a graph.

13. $y = x^2 + 4x - 5$

y-intercept: $x=0$

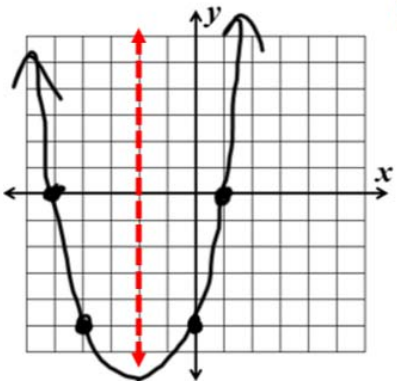
$y=-5$

x-intercepts: $0=x^2+4x-5$

$0=(x+5)(x-1)$

$x=-5$

$x=1$



14. $y = -3x^2 - 11x + 4$

y-intercept: $y=4$

x-intercepts: $0=-3x^2-11x+4$

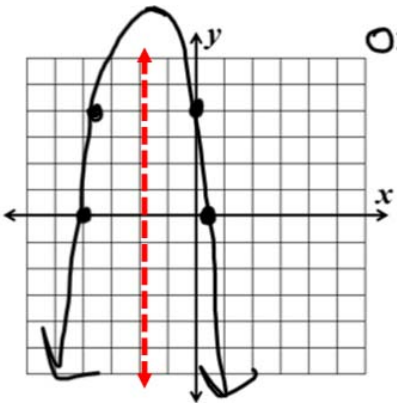
$-1 \quad -1 \quad -1 \quad -1$

$0=3x^2+11x-4$

$0=(3x-1)(x+4)$

$x=\frac{1}{3}$

$x=-4$



15. The average monthly temperature of an Alaskan town is modeled by the equation $T(m) = -m^2 + 13m - 22$ where m stands for month (January = 1, Feb = 2, March = 3, etc…) and T stands for Temperature in Fahrenheit.

a. Find $T(5)$. $T(5)=18$

b. Use a sentence to explain the meaning of $T(5)$ in the context of this problem.

In May, the average monthly temperature is 18 degrees Fahrenheit.

c. What month(s) is the average temperature zero?

$0=m^2-13m+22$

$0=(m-11)(m-2)$

$m=11$ (Nov)

$m=2$ (Feb)

16. The area of the rectangle shown below is 24 $feet^2$. **Find the perimeter** of the rectangle.

$A=L\cdot W$

$24=(x+3)(x-7)$

$24=x^2-4x-21$

$0=x^2-4x-45$

$0=(x-9)(x+5)$

$x=9 \quad x=-5$

$P=2w+2L$

$P=2(x-7)+2(x+3)$

$P=2(9-7)+2(9+3)$

$P=2(2)+2(12)$

$P=28$ feet

$(x+3)$

$(x-7)$

$A = 24\ feet^2$

X=-5 would give a negative width and length, so we throw this answer out.