1. Graph the following on a separate piece of graph paper. All graphs will 10X10 Graph except g. State the **axis of symmetry**, **vertex**, and **y** **intercept** for each graph. For **g** and **h** state **x intercepts** instead of y.

|  |  |
| --- | --- |
| * 1. $y=3x^{2}-1$
	2. $y=-2x^{2}$
	3. $f\left(x\right)=x^{2}-4x+2$
 | * 1. $f(x)=-3x^{2}-6x+1$
	2. $y=x^{2}-2x-8$
	3. $y=-x^{2}-6x-5$
 |

1. Solve each of the following by **factoring** or **taking** **square** **roots**.

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| --- | --- |
| * 1. $x^{2}-9=0$
 | * 1. $\left(x+4\right)\left(3x-2\right)=0$
 |
| * 1. $2x^{2}-15=35$
 | * 1. $x^{2}+8x-20=0$
 |
| * 1. $\left(x+3\right)\left(x-2\right)=0$
 | * 1. $2x^{2}+7x=-5$
 |
| * 1. $\left(x-8\right)\left(4x-5\right)=0$
 | * 1. $x^{2}-12x=28$
 |
| * 1. $4x^{2}-4x-3=0$
 | * 1. $-x^{2}-6x+26=10$
 |
|  |  |

1. A ball is thrown into the air with an initial velocity of 20ft/s and at an initial height of 5 ft. The height of the ball is modeled by the equation $h\left(t\right)=-16t^{2}+20t+5 $where h represents the height of the ball, in meters, and t represents time in seconds.
	1. How **long** does it take the ball to reach its maximum height?
	2. What is the ball’s **maximum** **height**?
	3. **When** does the ball hit the ground?
2. Jessica, who has a bionic arm, is crossing a bridge over a small gorge and decides to toss a coin

into the stream below for luck.  The distance of the coin above the water can be modeled by the

function $y=-16t^{2}+96x+112$ where t measures the time in seconds and y measures the height, in feet, above the water.

* 1. What is the **maximum** **height** of the coin?
	2. How **long** after the coin is tossed into the air, does it reach its maximum height?
	3. **When** does the coin hit the water?
1. Use the **quadratic** **formula** to solve the following quadratics.

|  |  |
| --- | --- |
| No Calculator | Calculator OK |
| * 1. $x^{2}-6x+5=0$
 | * 1. $-3x^{2}+2x-6=0$
 |
| * 1. $2x^{2}+6x=8$
 | * 1. $2x^{2}-9x+4=0$
 |
| * 1. $4x^{2}+8x=5$
 | * 1. $x^{2}-x=-13$
 |

1. Use the **discriminant** to determine how many solutions each quadratic has.
	1. $y=3x^{2}+2x-2$
	2. $y=5x^{2}-8x+6$
	3. $f\left(x\right)=-2x^{2}-12x-18$
2. Use your calculator to find the solutions (zeros) to each function.
	1. $f\left(x\right)=\frac{1}{2}x^{2}-6x+3$
	2. $f\left(x\right)=4x^{2}-10x-15$