**Transformations of Quadratic Functions (from Vertex Form)**

**Parent Function:** $y=x^{2}$

$$y=a\left(x-h\right)^{2}+k$$

**Examples: List the vertex, state minimum or maximum, transformations, domain, range, x-intercept, y-intercept, increasing interval, decreasing interval, and end behavior.**

1. $y=2x^{2}$
2. $y=\frac{1}{3}x^{2}$
3. $y=-x^{2}$
4. $y=\left(x-3\right)^{2}+2$
5. $y=\left(x+4\right)^{2}-1$
6. $y=4\left(x-2\right)^{2}-3$
7. $y=-3\left(x+1\right)^{2}-5$
8. $y=-\frac{2}{3}\left(x+3\right)^{2}+12$
9. $y=-4x^{2}+10$
10. $y=\frac{1}{2}\left(x-5\right)^{2}$

**Transformations of Square Root Functions**

**Parent Function:** $y=\sqrt{x}$

$$y=a\sqrt{x-h}+k$$

**Examples: List the starting point, transformations, domain, range, x-intercept, y-intercept, increasing interval, decreasing interval, and end behavior.**

1. $y=2\sqrt{x}$
2. $y=\frac{1}{3}\sqrt{x}$
3. $y=-\sqrt{x}$
4. $y=\sqrt{x-3}+2$
5. $y=\sqrt{x+4 }-1$
6. $y=4\sqrt{x-2}-3$
7. $y=-3\sqrt{x+1}-5$
8. $y=-\frac{2}{3}\sqrt{x+3 }+12$
9. $y=-4\sqrt{x}+10$
10. $y=\frac{1}{2}\sqrt{x-5}$

**Transformations of Inverse Variation Functions**

**Parent Function:** $y=\frac{1}{x}$

$$y=\frac{a}{x-h}+k$$

**Examples: List the transformations, domain, range, horizontal asymptote, vertical asymptote, increasing interval, decreasing interval, and end behavior.**

1. $y=\frac{2}{x}$
2. $y=\frac{1}{3x}$
3. $y=-\frac{1}{x}$
4. $y=\frac{1}{x-3}+2$
5. $y=\frac{1}{x+4}-1$
6. $y=\frac{4}{x-2}-3$
7. $y=-\frac{3}{x+1}-5$
8. $y=-\frac{2}{3\left(x+3\right)}+12$
9. $y=-\frac{4}{x}+10$
10. $y=\frac{1}{2\left(x-5\right)}$