**Section 1: LINEAR FUNCTIONS**

***Graph the following functions.***

|  |  |
| --- | --- |
| 1. $y=2x-2$

 | 1. $y=\frac{1}{2}x+1$

 |
| 1. $3x+5y=15$

 | 1. $2y-3x=12$

 |
| 1. $y-1=-\frac{1}{2}(x+5)$

 | 1. $y+4=-2(x+1)$

 |

***Solve the following equations. Show any necessary work.***

|  |  |
| --- | --- |
| 1. $4y-9=15$
 | 1. $4-3n=43$
 |
| 1. $15-5u=-48$
 | 1. $-4e-9=19$
 |
| 1. $5x+4-7x=5+x-13$
 | 1. $\frac{3}{4}n+16=2-\frac{1}{8}n$
 |
| 1. $5-\frac{1}{2}\left(b-6\right)=4$
 | 1. $2\left(x-3\right)+5=3(x-1)$
 |

**Section 2: QUADRATIC FUNCTIONS**

***Factor the following quadratics.***

|  |  |
| --- | --- |
| 1. $x^{2}-5x-24$
 | 1. $x^{2}+8x+12$
 |
| 1. $x^{2}+7x-18$
 | 1. $x^{2}+13x-36$
 |
| 1. $x^{2}+4x-21$
 | 1. $x^{2}-18x+81$
 |
| 1. $2x^{2}-3x-20$
 | 1. $5x^{2}-42x-27$
 |
| 1. $3x^{2}-16x+5$
 | 1. $2x^{2}+5x-12$
 |

***Graph the following functions. Identify the vertex and the x-intercepts to help your graph.***

|  |  |
| --- | --- |
| 1. $f\left(x\right)=-\left(x-2\right)^{2}+4$

 | 1. $f\left(x\right)=-\frac{1}{4}\left(x+2\right)^{2}+1$

 |
| 1. $f\left(x\right)=x^{2}-4x-5$

 | 1. $f\left(x\right)=x^{2}-2x-3$

 |
| 1. $f\left(x\right)=2x^{2}-5x-3$

 | 1. $f\left(x\right)=2x^{2}+5x+3$

 |

***Solve the following equations by factoring. Be sure to show any necessary work.***

|  |  |
| --- | --- |
| 1. $x^{2}+7x+10=0$
 | 1. $x^{2}+2x=8$
 |
| 1. $x^{2}=-4(2x+3)$
 | 1. $x\left(x-2\right)=35$
 |
| 1. $10x^{2}-5x+11=9x^{2}+x+83$
 | 1. $4x^{2}+3x-12=6x^{2}-7x-60$
 |

**Section 3: RATIONAL FUNCTIONS**

***Simplify the following expressions as much as possible.***

|  |  |
| --- | --- |
| 1. $\frac{x^{2}-3x-10}{x^{2}+x-2}$
 | 1. $\frac{x^{2}+x-6}{x^{2}+8x+15}$
 |
| 1. $\frac{x^{2}-16}{9-x}∙\frac{x^{2}+x-90}{x^{2}+14x+40}$
 | 1. $\frac{x^{2}+x-56}{x^{2}-2x-80}÷\frac{1}{x-10}$
 |
| 1. $\frac{6}{x-1}-\frac{5x}{4}$
 | 1. $\frac{3}{b-8}+\frac{7}{b+3}$
 |

***Graph the following functions. Be sure to identify the asymptotes and the y-intercept to help your graph.***

|  |  |
| --- | --- |
| 1. $f\left(x\right)=\frac{1}{x-3}+2$

 | 1. $f\left(x\right)=\frac{1}{x+4}-1$

 |
| 1. $f\left(x\right)=\frac{3x-1}{2x+1}$

 | 1. $f\left(x\right)=\frac{2x+3}{x-1}$

 |
| 1. $f\left(x\right)=\frac{4x-5}{2x-2}$

 | 1. $f\left(x\right)=\frac{x-1}{2x+2}$

 |

**Section 4: SIMPLIFYING RADICALS**

***Simplify the following radicals as much as possible.***

|  |  |
| --- | --- |
| 1. $\sqrt{24}$
 | 1. $\sqrt{512}$
 |
| 1. $\sqrt[4]{128n^{8}}$
 | 1. $\sqrt[3]{24m^{3}}$
 |
| 1. $\sqrt[5]{405x^{3}y^{2}}$
 | 1. $\sqrt[3]{56x^{5}y}$
 |