① $5x+2y=3$

$5x-3=-2y$

$-\frac{5}{2}x+\frac{3}{2}=y$

$m=-\frac{5}{2}$

parallel: $y-4=-\frac{5}{2}x$

OR $y=-\frac{5}{2}x+4$

perpendicular: $y-4=\frac{2}{5}x$

OR $y=\frac{2}{5}x+4$

② max: $(-0.775, 2.186)$

min: $(0.775, 1.817)$

③ No, doesn't pass Vertical line test

④ increasing: $(-2,0)(2,\infty)$

decreasing: $(-\infty,-2)(0,2)$

constraint: N/A

$f(-x)=\frac{1}{4}(-x)^4-2(-x)^2$

$=\frac{1}{4}x^4-2x^2$ = even, reflects over y-axis

⑤ $f(x)-g(x)=x^2-\sqrt{2-x}$

$f(g(x))=(\sqrt{2-x})^2=2-x$

$g(f(x))=\sqrt{2-x^2}$

⑥ domain: $(-\infty, 3]$ → $3-x\geq 0$, $-x\geq -3$, $x\leq 3$

Range: $(-\infty, 10]$

⑦ $y=10-\sqrt{3-x}$

$x=10-\sqrt{3-y}$

$x-10=-\sqrt{3-y}$

$-x+10=\sqrt{3-y}$

$(-x+10)^2=3-y$

$(-x+10)^2-3=-y$

$-(-x+10)^2+3=y$

$\boxed{f^{-1}(x)=-(-x+10)^2+3}$

domain = $(-\infty, 10]$

Range = $(-\infty, 3]$