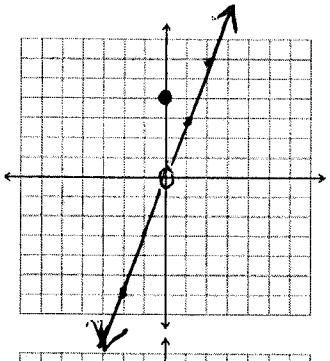
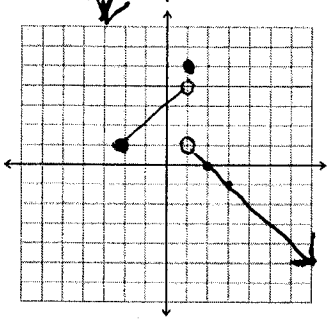
Part 1: Graph each piecewise function:

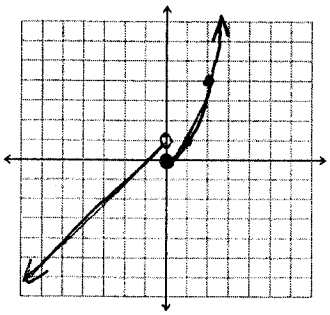
1. $f(x)=\begin{cases}3x & \text{if } x\neq 0\\ 4 & \text{if } x=0\end{cases}$



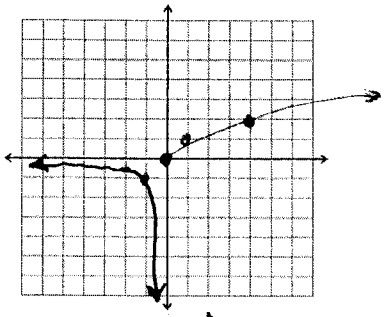
2. $f(x)=\begin{cases}x+3 & \text{if } -2\leq x<1\\ 5 & \text{if } x=1\\ -x+2 & \text{if } x>1\end{cases}$



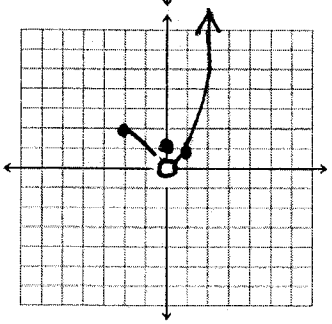
3. $f(x)=\begin{cases}1+x & \text{if } x<0\\ x^2 & \text{if } x\geq 0\end{cases}$



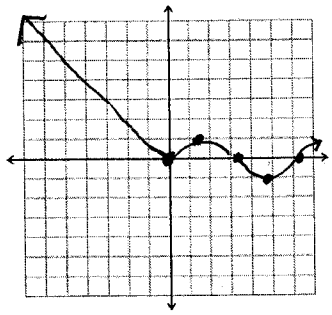
4. $f(x)=\begin{cases}\frac{1}{x} & \text{if } x<0\\ \sqrt{x} & \text{if } x\geq 0\end{cases}$



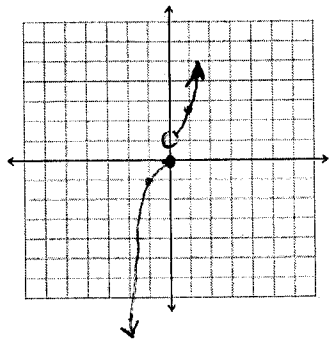
5. $f(x)=\begin{cases}|x| & \text{if } -2\leq x<0\\ 1 & \text{if } x=0\\ x^3 & \text{if } x>0\end{cases}$



6. $h(x) = \begin{cases} |x| & \text{if } x < 0 \\ \sin x & \text{if } x \geq 0 \end{cases}$



7. $g(x) = \begin{cases} x^3 & \text{if } x \leq 0 \\ e^x & \text{if } x > 0 \end{cases}$



Part 2: Multiple-choice practice questions:

1. **Multiple Choice** Which function has range {all real numbers}?
   (a) $f(x) = 4 + \ln x$
   (b) $f(x) = 3 - 1/x$
   (c) $f(x) = 5/(1 + e^{-x})$
   (d) $f(x) = \text{int}\,(x - 2)$
   (e) $f(x) = 4 \cos x$

2. **Multiple Choice** Which function is bounded both above and below?
   (a) $f(x) = x^2 - 4$
   (b) $f(x) = (x - 3)^3$
   (c) $f(x) = 3e^x$
   (d) $f(x) = 3 + 1/(1 + e^{-x})$
   (e) $f(x) = 4 - |x|$

3. **Multiple Choice** Which of the following is the same as the restricted-domain function $f(x) = \text{int}\,(x)$, $0 \leq x < 2$?
   (a) $f(x) = \begin{cases} 0 & \text{if } 0 \leq x < 1 \\ 1 & \text{if } x = 1 \\ 2 & \text{if } 1 < x < 2 \end{cases}$
   (b) $f(x) = \begin{cases} 0 & \text{if } x = 0 \\ 1 & \text{if } 0 < x \leq 1 \\ 2 & \text{if } 1 < x < 2 \end{cases}$
   (c) $f(x) = \begin{cases} 0 & \text{if } 0 \leq x < 1 \\ 1 & \text{if } 1 \leq x < 2 \end{cases}$
   (d) $f(x) = \begin{cases} 1 & \text{if } 0 \leq x < 1 \\ 2 & \text{if } 1 \leq x < 2 \end{cases}$
   (e) $f(x) = \begin{cases} x & \text{if } 0 \leq x < 1 \\ 1 + x & \text{if } 1 \leq x < 2 \end{cases}$