## Thinking Questions

6) Determine if $f(x)=(x-3)(x+4)(2x-8)(3+x)$ is odd, even or neither.

Solution

Rewrite

$f(x)=2(x-3)(x+4)(x-4)(x+3)$

$f(x)=2(x^2-9)(x^2-16)$

$f(x)=2[x^4-16x^2-9x^2+144]$

$f(x)=2x^4-32x^2-18x^2+288$

$f(x)=2x^4-50x^2+288$

$f(-x)=2(-x)^4-50(-x)^2+288$

$f(-x)=2x^4-50x^2+288=f(x)$

$\therefore$ $f(x)$ is even.