Some Practice Questions (Solutions)

T/F

(1.) True   (2.) true (If $(x-a)$ is a factor of $P(x)$
                              then $P(a)=0$)

(3.) True since $P(\frac{3}{2})=0$ (4.) True. ($P(x)=d(x)\cdot q(x)+r(x)$)

MC

(5) B: $k=-3$

(6)

A constant function is a function that satisfies $f(x)=C$, for some constant C and all numbers $x \in \mathbb{R}$. Which constant functions are even functions? Are there any constant functions that are odd functions?

All constant functions are even functions.

The constand function $f(x)=0$ is both even and odd.

(7)

Can the sum of an odd function and an even function be odd? Even? Explain.

The sum of an odd function and an even function cannot be even or odd unless one of the functions is $y=0$

Let $f(x)$ be even and $g(x)$ be odd and let $h(x)=f(x)+g(x)$

① If $h(x)$ is even, then

$$h(-x)=h(x)$$
$$f(-x)+g(-x)=f(x)+g(x)$$

$$f(x)-g(x)=f(x)+g(x)$$
$$2g(x)=0, \quad g(x)=0.$$

② If $h(x)$ is odd, then $h(-x)=-h(x)$

$$f(-x)+g(-x)=-f(x)-g(x)$$
$$f(x)-g(x)=-f(x)-g(x)$$
$$2f(x)=0, \quad f(x)=0$$