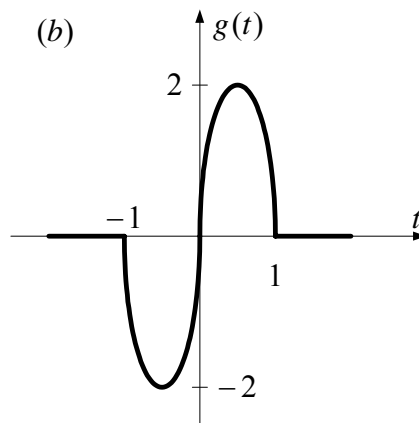
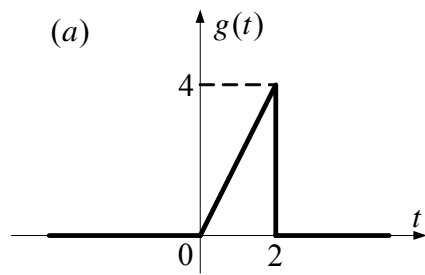
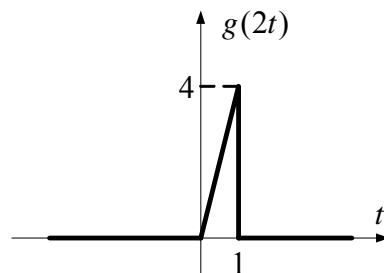
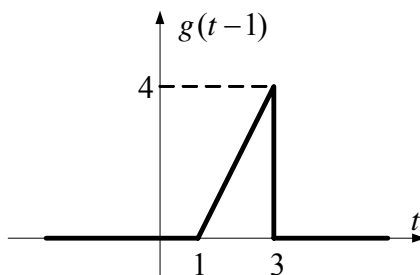
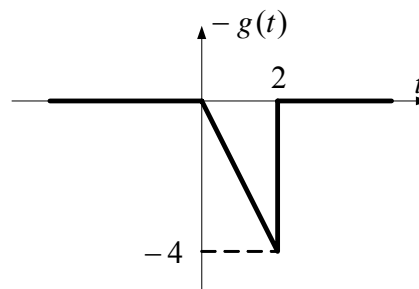
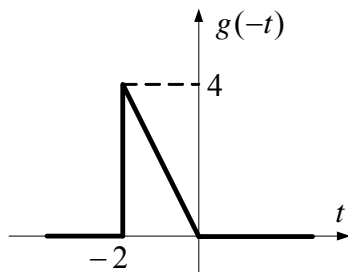


Zadatak 1.1

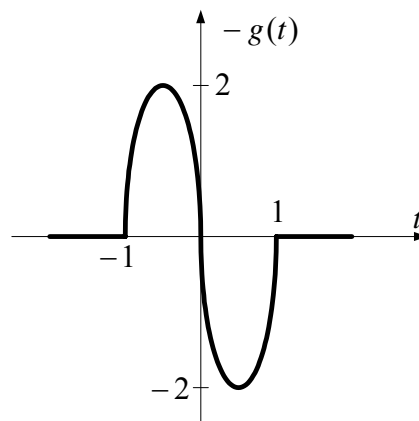
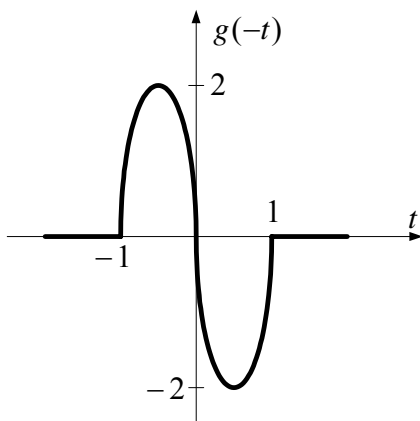
Za svaku od funkcija $g(t)$ datih slikama, nacrtati $g(-t)$, $-g(t)$, $g(t-1)$ i $g(2t)$.

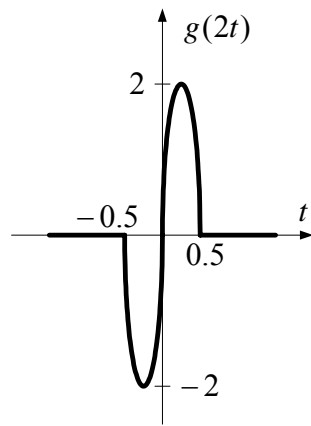
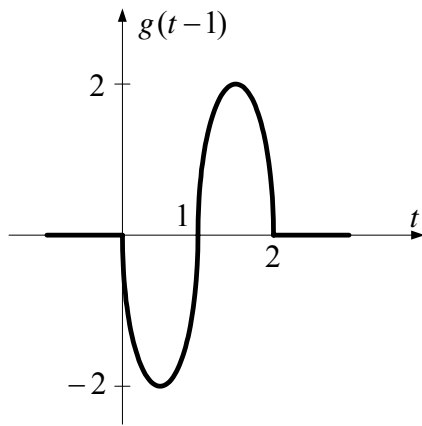
**Rešenje:**

(a)



(b)





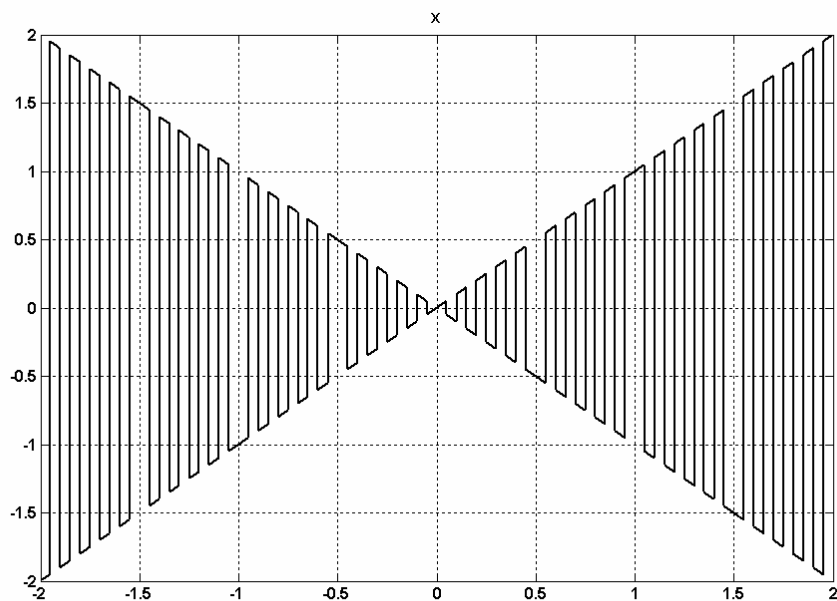
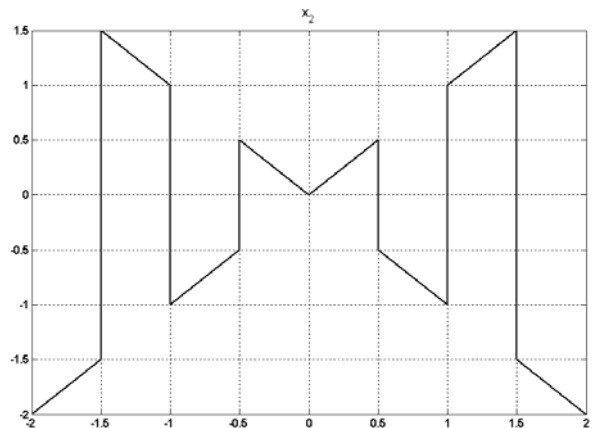
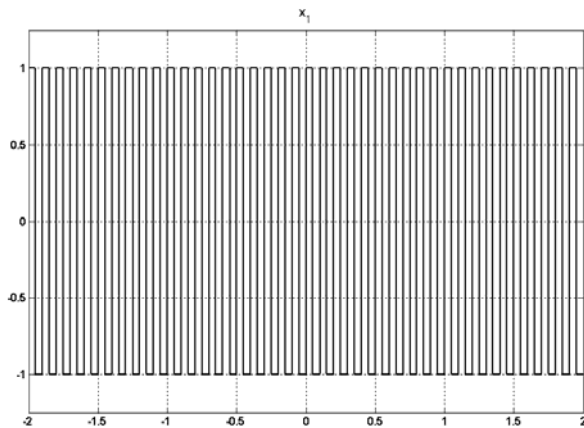
Zadatak 1.2

Dve funkcije definisane su na sledeći način:

$$x_1(t) = \begin{cases} 1, & \sin(20\pi t) \geq 0 \\ -1, & \sin(20\pi t) < 0 \end{cases} \quad \text{i} \quad x_2(t) = \begin{cases} t, & \sin(2\pi t) \geq 0 \\ -t, & \sin(2\pi t) < 0 \end{cases}$$

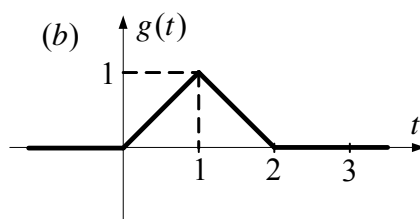
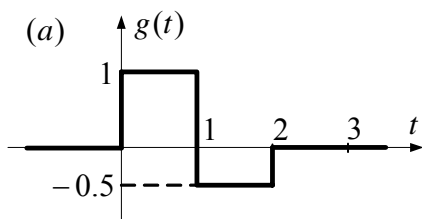
Nacrtati proizvod ove dve funkcije na intervalu $-2 < t < 2$.

Rešenje:

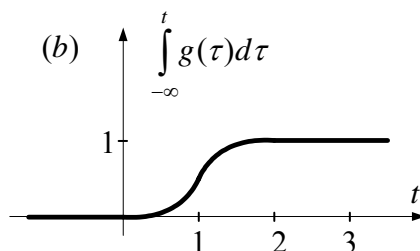
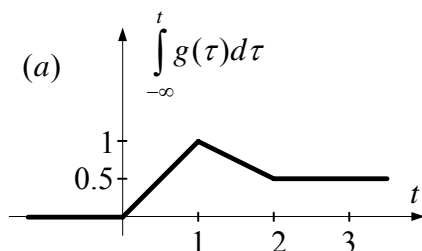


Zadatak 1.3

Skicirati integral od $-\infty$ do t funkcija datih sledećim slikama:



Rešenje:

**Zadatak 1.4**

Naći parni i neparni deo sledećih funkcija:

(a) $g(t) = 2t^2 - 3t + 6$

(b) $g(t) = \frac{2t^2 - 3t + 6}{1+t}$

(c) $g(t) = \frac{2-t}{1+t}$

(d) $g(t) = 20 \cos\left(40\pi t - \frac{\pi}{4}\right)$

(e) $g(t) = h(t) = \begin{cases} 0, & t < 0 \\ 0.5, & t = 0 \\ 1, & t > 0 \end{cases}$

Rešenje:

Svaka funkcija $g(t)$ može se napisati u obliku: $g(t) = g_p(t) + g_n(t)$, gde je $g_p(t)$ parni, a $g_n(t)$ neparni deo funkcije. Iz osobina parnosti ($g_p(-t) = g_p(t)$) i neparnosti ($g_n(t) = -g_n(-t)$) sledi:

$$g_p(t) = \frac{1}{2}[g(t) + g(-t)] \quad \text{i} \quad g_n(t) = \frac{1}{2}[g(t) - g(-t)].$$

(a) $g_p(t) = 2t^2 + 6$, $g_n(t) = -3t$

(b) $g_p(t) = \frac{5t^2 + 6}{1-t^2}$, $g_n(t) = -t \frac{2t^2 + 9}{1-t^2}$

(c) $g_p(t) = \frac{t^2 + 2}{1-t^2}$, $g_n(t) = -\frac{3t}{1-t^2}$

(d) $g_p(t) = \frac{20}{\sqrt{2}} \cos(40\pi t)$, $g_n(t) = \frac{20}{\sqrt{2}} \sin(40\pi t)$

(e) $g_p(t) = \frac{1}{2}$, $g_n(t) = \frac{1}{2} \operatorname{sgn}(t)$