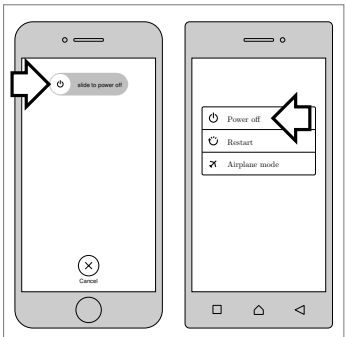
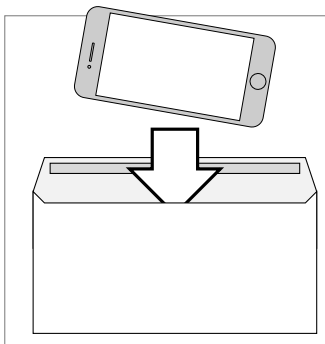
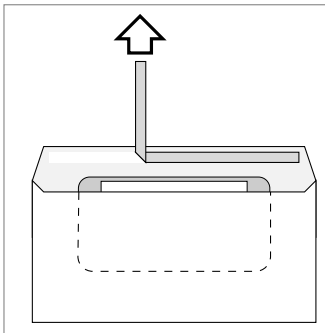


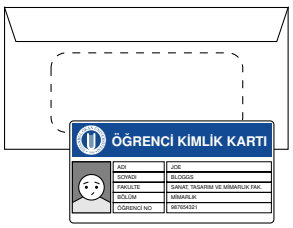
switch your mobile phone off



put it in your envelope



seal your envelope



place the envelope on **your** desk with your university card

- You may use this page as scrap/scratch paper.
- Switch your mobile phone off and seal it in the envelope provided. Then place your sealed envelope on your desk.
- Please also place your university card on your desk.
- If you have a smartwatch or another smart device, please request an extra envelope for it.
- Do not open your envelope(s) until your exam is finished.
- At the end of the exam, please put this page and your empty envelope(s) in the rubbish bin.

- Bu sayfayı karalama kağıdı olarak kullanabilirsiniz.
- Cep telefonunuzu kapatınız ve size verilen zarfın içine koyunuz. Ardından kapalı zarfı sıranızın üzerine koyunuz.
- Lütfen öğrenci kimliğinizi de sıranızın üzerine koyunuz.
- Eğer akıllı saatiniz ya da başka bir akıllı cihazınız varsa, lütfen onun için de fazladan bir zarf isteyerek zarfa koyunuz ve zarfı kapatınız.
- Zarfı, sınav süresi bitene kadar açmayınız.
- Sınav sonunda lütfen bu sayfayı ve boş zarfınızı çöpe atınız.

$$\cos\theta = \sin\left(\tfrac{\pi}{2} - \theta\right)$$
$$\cos^2\theta + \sin^2\theta = 1$$
$$1 + \tan^2\theta = \sec^2\theta$$
$$1 + \cot^2\theta = \operatorname{cosec}^2\theta$$
$$\cos(A+B) = \cos A\cos B - \sin A\sin B$$
$$\sin(A+B) = \sin A\cos B + \cos A\sin B$$
$$\cos 2\theta = \cos^2\theta - \sin^2\theta$$
$$\sin 2\theta = 2\sin\theta\cos\theta$$
$$\cos^2\theta = \tfrac{1}{2}(1+\cos 2\theta)$$
$$\sin^2\theta = \tfrac{1}{2}(1-\cos 2\theta)$$

$$x = r\cos\theta$$
$$y = r\sin\theta$$
$$x^2 + y^2 = r^2$$

$$\cos 0 = \cos 0^\circ = 1 \qquad \sin 0 = \sin 0^\circ = 0$$
$$\cos\tfrac{\pi}{6} = \cos 30^\circ = \tfrac{\sqrt{3}}{2} \qquad \sin\tfrac{\pi}{6} = \sin 30^\circ = \tfrac{1}{2}$$
$$\cos\tfrac{\pi}{4} = \cos 45^\circ = \tfrac{1}{\sqrt{2}} \qquad \sin\tfrac{\pi}{4} = \sin 45^\circ = \tfrac{1}{\sqrt{2}}$$
$$\cos\tfrac{\pi}{3} = \cos 60^\circ = \tfrac{1}{2} \qquad \sin\tfrac{\pi}{3} = \sin 60^\circ = \tfrac{\sqrt{3}}{2}$$
$$\cos\tfrac{\pi}{2} = \cos 90^\circ = 0 \qquad \sin\tfrac{\pi}{2} = \sin 90^\circ = 1$$

$$(uv)' = uv' + u'v$$
$$\left(\frac{u}{v}\right)' = \frac{u'v - uv'}{v^2}$$
$$(f\circ g)'(x) = f'(g(x))\,g'(x)$$
$$\operatorname{av}(f) = \operatorname{ort}(f) = \frac{1}{b-a}\int_a^b f(x)\,dx$$

$$\frac{d}{dx}x^n = nx^{n-1}$$
$$\frac{d}{dx}\sin x = \cos x$$
$$\frac{d}{dx}\cos x = -\sin x$$
$$\tan x = \tfrac{\sin x}{\cos x} \qquad \frac{d}{dx}\tan x = \sec^2 x$$
$$\sec x = \tfrac{1}{\cos x} \qquad \frac{d}{dx}\sec x = \sec x\tan x$$
$$\cot x = \tfrac{\cos x}{\sin x} \qquad \frac{d}{dx}\cot x = -\operatorname{cosec}^2 x$$
$$\operatorname{cosec} x = \csc x = \tfrac{1}{\sin x} \qquad \frac{d}{dx}\operatorname{cosec} x = -\operatorname{cosec} x\cot x$$

$${}_nP_r = P(n,r) = \frac{n!}{(n-r)!}$$
$${}_nC_r = C(n,r) = \frac{n!}{(n-r)!\cdot r!}$$
$$P(A|B) = \frac{P(A\cap B)}{P(B)}$$

$$c = \sqrt{a^2 - b^2} \qquad \text{or} \qquad c = \sqrt{a^2 + b^2}$$

$$\operatorname{proj}_{\mathbf{v}}\mathbf{u} = \left(\frac{\mathbf{u}\cdot\mathbf{v}}{\|\mathbf{v}\|^2}\right)\mathbf{v} \qquad \theta = \cos^{-1}\left(\frac{\mathbf{u}\cdot\mathbf{v}}{\|\mathbf{u}\|\,\|\mathbf{v}\|}\right)$$

$$\mathbf{u}\times\mathbf{v} = (u_2v_3 - u_3v_2)\mathbf{i} - (u_1v_3 - u_3v_1)\mathbf{j} + (u_1v_2 - u_2v_1)\mathbf{k}$$

$$d = \frac{\left\|\overrightarrow{PS}\times\mathbf{v}\right\|}{\|\mathbf{v}\|} \qquad d = \frac{\left|\overrightarrow{PS}\cdot\mathbf{n}\right|}{\|\mathbf{n}\|}$$

$$d = \frac{\left\|\overrightarrow{P_1P_2}\times\mathbf{v}_1\right\|}{\|\mathbf{v}_1\|} \qquad d = \frac{\left|\overrightarrow{P_1P_2}\cdot(\mathbf{v}_1\times\mathbf{v}_2)\right|}{\|\mathbf{v}_1\times\mathbf{v}_2\|}$$